

*CLINICAL*  
*OBSERVATIONS*  

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*SIR. H. MARSH*

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CLINICAL LECTURES  
DELIVERED IN  
STEEVENS' HOSPITAL,  
WITH OBSERVATIONS ON  
PRACTICAL MEDICINE.

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JOHN RUSSELL, ESQ., M.P.

Portrait of John Russell, Esq., M.P., by Sir George Haydon, 1847.

# CLINICAL LECTURES

DELIVERED IN

## STEEVENS' HOSPITAL,

WITH OBSERVATIONS ON

### PRACTICAL MEDICINE.

VOL. I.

BY

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DUBLIN: FANNIN AND CO.

LONDON: JOHN CHURCHILL AND SONS.

EDINBURGH: MACLACHLAN AND STEWART.

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MDCCCLXVII.



DUBLIN : PRINTED BY CHARLES COOPER,  
LINCOLN-PLACE, MERRION-SQUARE.

# DEDICATION

TO

SIR DOMINIC JOHN CORRIGAN, M.D., BART.;

PHYSICIAN IN ORDINARY TO THE QUEEN IN IRELAND;  
EX-PRESIDENT OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS,  
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CONSULTING PHYSICIAN TO THE WHITWORTH MEDICAL AND  
HARDWICKE FEVER HOSPITALS.  
ETC., ETC., ETC.

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MY DEAR SIR DOMINIC,

PERMIT me to DEDICATE to you SIR HENRY MARSH'S  
CLINICAL LECTURES AND OBSERVATIONS ON PRACTICAL MEDICINE. I well know the high estimation in which you were held by SIR HENRY MARSH, and, whilst gratifying myself by doing so, I believe that I am paying SIR HENRY MARSH'S memory a compliment by dedicating this Volume to you, as one who has materially assisted in raising and maintaining the high character of the Dublin School of Medicine.

Believe me,

Sincerely yours,

J. STANNUS HUGHES.

24, WESTLAND-ROW.  
*July, 1867.*



## PREFATORY INTRODUCTION.

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TO THE EDITOR OF THE DUBLIN MEDICAL PRESS.

MY DEAR SIR,

HAVING arranged with SIR HENRY MARSH to edit his Clinical Lectures, the pages of THE DUBLIN MEDICAL PRESS having been, as you are already aware, selected by him as the medium of circulation, the following introductory remarks to the Lectures were drawn up by me a few short days before death so suddenly and unexpectedly removed SIR HENRY MARSH from amongst us.

*Prefatory Remarks to Sir Henry Marsh's Clinical Lectures.*

BY JAMES STANNUS HUGHES, M.D.

"Having, whilst acting in Steevens' Hospital as Clinical Clerk to SIR HENRY MARSH, from 1839 to 1842, taken short-hand notes of all of his Clinical Lectures and Observations, I now, with his permission, publish them, believing that they will prove acceptable to the Profession; and with a view of bringing down full information on the subjects in question to the present day, I have not only quoted some of the best modern authorities, wherever I deem it desirable to do so, but I likewise have, with SIR HENRY MARSH's concurrence, embodied the essays in point, which have comparatively recently appeared from his pen in the pages of what may now truthfully and proudly be called our National Medical Magazine—namely, THE DUBLIN QUARTERLY JOURNAL OF MEDICAL SCIENCES.

"Of much of the arduous responsibility I have undertaken, I have been relieved by a promise from SIR HENRY MARSH, that he will revise each Lecture before its being sent to press."

Need I say that no one regrets more sincerely than I do that the promise contained in the last paragraph cannot now be realized, notwithstanding which, however, I do not hesitate to forward to you, according to arrangement, the enclosed MS. copy of the Lectures, feeling that in doing so I am performing, although imperfectly I admit, one of the last wishes of SIR HENRY MARSH.

I remain,

My dear Sir,

Yours very truly,

JAMES STANNUS HUGHES.

24, WESTLAND-ROW.





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# SIR HENRY MARSH'S CLINICAL LECTURES.

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## LECTURE I.

### PLEURITIC EFFUSIONS: EMPYEMA.

GENTLEMEN,—In the present course of clinical instruction, I purpose calling your attention to general heads of disease, and following up each disease in its different characters and features until we fully master it, and with this view I propose this morning to lay before you a few cases and remarks on the different forms of pleuritic effusion, and under this head comes empyema; this latter term, I think, should be strictly confined to an effusion of pus, differing as it does from every other form of effusion.

I may here, in passing, remark that the fever of the late influenza produced more cases of pleuritic effusion than ever I have known to exist at the same time. I had not long since no less than fourteen cases under my care at the same period, all of which could be referred to influenza, and these cases were by no means easily diagnosed.

The nature of the fluid poured out as the result of pleuritis is a very interesting subject to the practitioner, for by an accurate knowledge of it will he be guided both in his treatment and prognosis. To a certain extent we can arrive at a knowledge of the character of the fluid effused by the symptoms, age, former state of health, and length of time the disease existed previous to the distension of the affected side. By these means, I say, we can, to a certain extent, tell whether the fluid effused be purulent or not, but we cannot say so positively; however, in the explorator, we possess a sure means of finding out the nature of effusion into the pleural cavity.

Pleuritic effusions result from some form or other of inflammation, be it acute, semi-acute, or perfectly chronic, and I think the best way to pursue the subject will be to give a few cases of each form that have occurred within my own recollection. The first case I shall bring before your notice occurred some years back. A gentleman, aged 21, whilst hunting, was thrown from his horse five weeks before the day of my first visit. This gentleman had led an active life in the country, full of health, and possessed a sound and robust constitution. His case was represented to me as one of bilious fever, and had been treated as such. I saw him in bed, lying half on his back and half on his right side; his head and shoulders elevated; his pulse was between 120 and 130, small and weak; his breathing was very much hurried and laboured, the *alae nasi* in full action; he had *no cough*. Upon examining the thorax the following appearances presented themselves: The heart's impulse could be distinctly felt several inches

to the right side of the median line; the left side of the chest was universally dull on percussion, with a total absence of respiratory sound; the affected side of the chest was considerably expanded; the intercostal spaces widened and prominent; the integuments of the left side and left arm were œdematous, and the respiratory muscles of that side were inactive; respiration in the right lung was puerile.

As the patient lived some miles from town, I advised an immediate operation for paracentesis thoracis. The late Mr. McDowell, an excellent surgeon and most expert operator, was fixed on to perform it, and on the same day he made an opening into the chest, and removed about three pints of thick well-formed pus, with great relief to the patient.

On Mr. McDowell's return to town he told me that he had performed the operation in such a manner as would, he hoped, prevent the ingress of air; however, I found on my next visit, that air occupied a large portion of the upper part of the thorax, and that a considerable quantity of fresh fluid had been secreted. I therefore advised a repetition of the operation, when exit was given to a still larger quantity of pus. From this time the effused fluid was allowed gradually to escape, the chest by degrees contracted, the heart slowly returned to its natural position, and the patient, altered somewhat in shape, but restored to perfect health, resumed his former agricultural and hunting pursuits.

This, then, was a well-marked case of acute pleuritic effusion—a man in good health, without any disease of the



lungs, receives an injury of the chest, and in a very few days labours under extensive empyema.

Andral records a case where the effusion was formed on the 5th day, complete dulness on the 9th, and a fatal termination on the 11th. Other authors mention cases where the patients died on the 15th day, and some as early as the 8th or 9th, with their sides full of pus.

I shall now read for you the following case of empyema, for the notes of which I am indebted to Dr. Fleming:—

“ Philip Geoghegan, æt. 40, servant, of temperate habits and in comfortable circumstances, was exposed to cold on Tuesday, 3rd September. In the course of that night he was attacked with the ordinary symptoms of the most acute pleuritis of the left side, accompanied at its onset with so much pain and uneasiness in the corresponding lumbar and umbilical regions, as to lead to the opinion that the seat of his sufferings was in the abdomen.

“ Twenty-four hours after the commencement of the attack he was seen by Dr. Fleming, who found him suffering the most acute agony; his fever was considerable, and the local distress was very great; there was much dyspnœa, indeed almost orthopnœa; he lay on the back supported by pillows, and was even tenacious of speaking from the severity of the pain, which now extended upwards, as far as the mammary region; there was no cough, nor any lesion of the right lung.

“ Respiration was audible in the upper part of the left lung; but the examination of the lower portion was wholly unsatisfactory from the presence of a large blister which had been some hours applied around it; he had been bled, and his bowels were freely evacuated. Mercury and tartar emetic were now given him. The blistered surface was

covered over with a large emollient poultice and repeatedly fomented, from which great relief was experienced.

“On the fourth day a severe attack of pneumonia supervened, attended with most characteristic general and physical signs. From no further alteration than a repetition of the bleeding the pneumonia subsided, the sputa passing through the ordinary changes, and the local physical changes and the local physical signs proportionally varying. The respiration throughout the whole of the right lung was puerile, and that in the upper part of the left slightly vesicular, but becoming completely bronchial in the mammary region, below which it was totally inaudible ; no friction sound could be detected, and from percussion at this period the evidence was not satisfactory, as well as from tenderness as from a semi-œdematous state of the integuments supervening on the blister.

“During all this period the position was on the back, varying as to perfect recumbency, but yet never tending to either side from the distress immediately arising.

“The fever, after about a fortnight, gradually subsided, and the mouth, which had been slightly affected by mercury, was daily improving, when pain, with varied degrees of acuteness, recurred in the left side. The cough almost subsided, but without alteration in the stethoscopic phenomena. A considerable œdematous state of the integuments of the left side continued, complete dulness on percussion, and from day to day cardiac displacement, chiefly in the vertical direction. Absence of any respiration below the mammary region anteriorly and posteriorly at the root of the lung, with the exception of a faint rustle, which was evidently transferred from the opposite side. Profuse *partial* night sweats then set in and irregularly-marked hectic, the perspiration completely bedewing the chest on the *right* side, whilst the left remained perfectly dry.

“ On the 8th of October, when seen by Sir Henry Marsh, every well-marked physical sign of effusion into the left pleural cavity existed; dilatation of the left side to the extent of an inch and a half beyond the right side; general œdema of left side, partly towards the inferior portion, and on the mammary region there were marked fulness and extreme tenderness on the slightest pressure. This circumstance, with the presence of obstinate diarrhœa, which had produced considerable debility, led to the postponement of the operation, in expectation that the contained fluid would point. Moreover, ordinary signs of hectic were persistent for some time.

“ October 13th: Pulmonary distress became more urgent; sudden supervention of most severe dyspnœa; sensation of impending suffocation; severe and constant cough, with frothy and colourless expectoration. These symptoms were suddenly relieved by an immense discharge of purulent matter, which gushed forth from the mouth.\*

\* In the May number of the *Dublin Quarterly Journal of Medical Sciences* for 1840, the late Dr. George Greene, in his observations on empyema, makes some admirably practical and original remarks on profuse purulent expectoration sometimes met with in these cases, and which from its character, both as to quantity and quality, might lead to the supposition that it depended on an abscess in the lung or on a fistulous communication established between a bronchial tube and the matter contained in the pleural cavity. Dr. Greene, after detailing some highly interesting cases in point, then enters as follows on an explanation as to the cause of this profuse and purulent expectoration, and its changes after the operation of paracentesis thoracis:—

“ It will be observed in all these cases, that a very remarkable diminution of the expectoration, and an alteration in its character, immediately ensued, after a free external outlet

“14th: Mr. Colles saw the patient to-day. Discharge from the lungs equally profuse, without any apparent alteration in the physical signs, but examination not very satisfactory from the fixed position and debilitated state of the patient. Intercostal spaces dilated as before.

“To ascertain whether the contents of the pleura were similar to the expectoration, an explorator was passed through the most prominent intercostal space, when their similarity became evident. No injurious result followed the operation, and the wound healed by the first intention.

“17th: Dyspnœa again set in, with marked diminution of expectoration; diarrhœa present, with unequivocal evidence of purulent discharge in the stools, exactly similar to that expectorated.

“22nd: Purulent discharge by stool and expectoration now almost wholly suppressed; violent dyspnœa; sense of suffocation gradually becoming more and more distressing.

“26th: Symptoms nearly the same as at last report;

was established for the matter lodged in the pleural cavity, and did not reappear as long as it continued to flow freely to the exterior of the chest; and that, on the other hand, in two instances, when the escape of the matter was prevented by a temporary closure of the wound, the expectoration again made its appearance, possessed of its original puriform character. It is obvious, therefore, that some relation must exist between these two phenomena—that is, between the accumulation in the pleural sac and the appearance of a profuse expectoration; the latter diminishing in proportion to the quantity of matter discharged from the external wound, and again increasing whenever the external evacuation is from any cause impeded, and this in cases where, in one instance at least, it has been *proved* that no communication was established between the sac and the bronchial apparatus.

“The first explanation I heard offered as to the nature and

cough equally distressing; sputa frothy, with scarcely a trace of pus; bowels steady: no appearance of purulent discharge; sweating very profuse; strength good; pulmonary and cardiac signs as before.

"The man being anxious for the operation, Dr. Fleming punctured the side with a lancet-shaped trochar, and removed about a pint of purulent fluid of a slightly fœtid odour.

"A great variety of changes subsequently took place. Several intercostal pointings in the vicinity of the original puncture occurred, which, on being opened, gave vent to discharges often of a most fœtid character, during which flakes of shreddy disorganized lymph escaped. The sputa occasionally recurred, and was accompanied with an equally fœtid odour, so much so, as to taint the air of the room in which he slept.

"The constitutional disturbance attendant upon those local changes was equally varied and unpromising; yet

cause of this expectoration was suggested by Dr. Hutton in a consultation held on one of the cases detailed. He observed that he had frequently seen the expectoration to subside and lose its character when an opening had been made for the collection, and had consequently come to the conclusion, that in many cases of empyema the expectoration was the result of an effort of Nature to free the system of the purulent deposit, through an external outlet, which, in these instances, was effected through the bronchial tubes. This explanation I consider, for reasons to be mentioned, as applicable to many cases where we have physical evidence against the supposition, that cavities exist in the lung, or that a fistulous communication has been established between the morbid collection seated in the pleural sac and the bronchial tubes. Now, if it can be proved that this explanation of the cause of the expectoration is correct, it will be important, because many cases will occur



notwithstanding, the several openings cicatrized, expectoration and cough disappeared, and ultimate recovery did take place, the ordinary physical local lesions supervening, as in similar pleuritic effusions. This man after some months put up flesh, and gained strength so perfectly as to be enabled to return to his occupation as a servant, and even to act occasionally as a porter. Within the last few years (eight or ten since his illness) he called on Dr. Fleming, and appeared in fair health, making no special complaint of any chest uneasiness, beyond attacks of dyspnœa, and perhaps cough, on any unusual exertion."

Here the effusion, we may probably say, took place about the third or fourth week. However, it took place early, and we may consequently look on it as a case of acute empyema.

In most of the cases of empyema which I recollect that

where, when the physical signs are obscure, we may be inclined to lay too much stress on this symptom, and ascribe this profuse and purulent expectoration to a pulmonary abscess, and, consequently, be less inclined to recommend the operation of paracentesis.

"That the expectoration, however (in cases where the physical evidence is not sufficient to ascertain the existence of cavities, or is altogether opposed to that supposition), may in many instances be regarded as a simple excretion from the bronchial mucous membrane, receives confirmation from observing that other portions of this structure serve as outlets, through which morbid collections are evacuated from the system. The subsidence or disappearance of morbid collections in the abdominal cavity is often effected by a critical discharge from the bowels, and the fact is familiar to every practitioner. But many instances of these critical discharges,

recovered, the patients were under twenty-one years of age; but here the recovery took place in a man of forty, which is an interesting fact. What the man's constitution was previous to the attack, I cannot say.

In empyema the enlargement of the side, though often detected by the eye, cannot also at the same time be detected by measurement. I should rather, then, in those cases, trust to the eye than measurement.

The following case, which may fairly be termed one of latent pleuritic effusion, is one of considerable interest :—

Catherine Connor, *ætat.* 16, was admitted into this hospital labouring under fever, and at present in No. 6 ward. The chief local symptoms during the fever were abdominal, but during a tedious convalescence a continued feeble pulse, palpitation of heart, darting pains, and diffi-

more remarkable than that mentioned, are on record. Thus the matter of empyema has been discharged by evacuation from the bowels, and in other cases from vagina and bladder.

“Other instances might be readily adduced of similar critical discharges, those mentioned, however, are sufficient to show that they are often effected by some peculiar determination to various portions of the mucous membrane, and as it has been proved above, that no fistulous communication may exist between the purulent matter seated in the liver, stomach, or peritoneal cavity, and the portion of the mucous membrane through which it is evacuated, we are entitled to assume, by a parity of reasoning, that a similar disposition may occasionally prevail when matter is accumulated in the pleural sac, and be evacuated by excretion through the great emunctory presented by the bronchial mucous membrane. If this supposition be correct, it will account for the remarkable

ent respiration, excited suspicion, and on a minute examination she was found to labour under extensive pleuritic effusion of the left side of the thorax.

On looking at the thorax of this girl there was observed but little motion of the left side ; there was a fulness in the intercostal spaces, the whole side being dilated. There was dulness on percussion over the entire of the affected side. Percussion on the right side was also partially dull. We found at the same time bronchial respiration at the apex of the left lung, but there was a complete absence of vesicular respiration over the entire of this lung. Puerile respiration over the right lung owing to increased action. There was dulness in one portion of the right side owing to the displacement of the heart.

At present the respiratory motion is confined to the

character of the expectoration in the cases I have detailed, and will, so far as the consideration of this symptom is concerned, disembarass our minds as to the cause which has produced it. For, unless other evidence of a very decided character is obtained, that the lung is diseased, the occurrence of a very copious and purulent expectoration may be referred to the operation of the pathological law above alluded to, and, consequently, should not prevent us from having recourse to the operation of paracentesis. Whether the matter of empyema is, in any instance, completely discharged from the system by this determination to the bronchial mucous membrane, I am unable from my own experience to determine, but in those cases where it has been vaguely stated, that the matter has been absorbed, it is probable that the removal of the collection has, in part at least, been effected in the manner just explained."—J. S. H.

right half of the thorax.\* This, although detected when closely looked at anteriorly, yet is better marked posteriorly. Here the scapula and shoulder of the affected side have an angular motion. In respiration the muscles on the sound side are large and full, those on the left side are atrophied and wasted. The left shoulder is depressed, and the inferior angle of the scapula is projected. The left side is now in a precisely opposite state in which it was at the commencement or first stage of pleuritic effusion.

On the left side percussion is dull, and will continue so for life, owing to a thickened state of the pleura. This fact I have tested after fourteen or fifteen years had

\* Within the last few months I saw in the person of one of the Lord Lieutenant's postillions, a youth of about 17, one of the most sudden, insidious, and extensive pleuritic effusions of the left side of the thorax I ever witnessed. The boy, who had enjoyed excellent health, and who had all the ease and comfort of a happy home without any laborious employment whatsoever, informed the state coachman on the very morning of my visit to him, but not till then, that "he did not feel very well." I was consequently immediately summoned to see him, and found, on examination, the left side of the thorax bulging, with dulness on percussion and absence of respiration, together with displacement of the heart, which was pulsating under the right nipple. His breathing was rapid and oppressed; his countenance livid and distressed; he was unable to lie down in bed, and was supported in the sitting posture; pulse rapid and somewhat feeble; bowels confined; kidneys inactive; occasional short dry cough, accompanied by some pain in left side. The history of the case was briefly this:—A very few days before my first visit to him he was attacked with a rather acute stitch in the left side, of which he thought but little; the acuteness of the pain

elapsed from the commencement of the attack, and this may lead medical men to err in diagnosis. I met myself a case lately, and it puzzled me very much until I inquired into its anterior history.\*

The respiratory murmur in Catherine Connor's case is

soon subsided, and it was not until his breathing became oppressed that he made any complaint about his health.

The treatment adopted in this case consisted of leechings to the affected side, proto-iodide of mercury, so as gently to affect the mouth, blisters, followed by the external use of tincture of iodine, under which the pleuritic effusion gradually lessened; but it was not until we administered to him digitalis with hydriodate of potass, that a very marked and decided improvement took place; for from the moment the diuretics began to act freely, the heart rapidly returned to its natural position. Whilst taking the diuretics the patient's strength was supported by means of light nutritious diet and claret. As the pulse continued somewhat accelerated, and as a slight irritating cough persisted after the effusion had apparently been altogether removed, the patient was ordered cod-liver oil and chalybeate medicines, and was sent to his native air (Yorkshire), where he was progressing favourably when last I heard of him. Dr. Corrigan, with the Lord Lieutenant's sanction, visited this patient in consultation with me.—J. S. H.

\* I was afforded an opportunity within the last week of examining, with Dr. Corrigan, the chest of a young gentleman I attended some twelve years ago, in conjunction with Dr. Browne of Redmond's-hill in this city, for empyema of the right side removed by absorption. The right side is now slightly contracted, and somewhat dull on percussion, more especially in the infra-scapular region. Respiration is, however, audibly heard over every portion of the right lung, from its apex to its base.—J. S. H.

now detectible on the left side, except at the inferior lateral and inferior dorsal regions. Absorption usually in these cases takes place first in the superior region, the lung will become gradually clearer, but it will never recover its natural sound.

The voice don't in Connor's case point out much, as it is naturally with her very weak ; but in some it is very easy to detect a difference by placing the hand on the chest.

The heart in this case pulsated high on the right side, almost under the right clavicle, and could be detected almost daily shifting its position, and the effusion yielded to treatment, and can now be felt pulsating in its natural position.

There are still constitutional symptoms—viz., slight hectic, slight pulmonary irritation, with a tickling cough, tumultuous action of heart, thirst, and nightly perspirations, pulse seldom below 90. These latter symptoms might be mistaken for phthisis. She likewise sometimes has a slight rigor.

In young life I made a mistake of this kind where I gave my opinion that consumption had set in ; but finding the heart a little displaced, and respiration in a healthy state in the upper part of the lung, I looked more closely to the case, and gave a subsequent opinion that pleuritic effusion existed, and the man recovered.

## LECTURE II.

## EMPYEMA: ITS DIAGNOSIS AND PATHOLOGY.

HAVING in my last lecture illustrated by cases several of the points of prominence in connexion with the clinical history of pleuritic effusion, I shall now proceed to a consideration of the *symptoms* and *signs* of empyema.

The *symptoms* of empyema may be divided into local and constitutional.

The first of the constitutional symptoms is the accompanying fever, which is generally, in the first instance, of the inflammatory form, but it varies in different cases. In some the fever is so slight as to escape observation. The inflammatory type generally subsides after the effusion has been completed, and then becomes changed into the hectic form.

As to the local symptoms, pain forms a prominent feature, it permits of the patient making but a very little respiratory exertion. In some cases the pain is but slight, and is referred to the immediate seat of disease, and in other cases to the shoulder or lumbar region.

The cough is generally peculiar, short and dry; in some cases there is no cough at all, or he avoids it as much as possible.

The breathing is remarkable, we cannot call it dyspnoea,



it is quick rapid breathing. This condition is often overlooked. We have not a good word for this state of the breathing, we have dyspnœa and orthopnœa, and I don't see why we should not christen this, and call it *okyspnœa*, which may be described as rapid difficult breathing.

The gradual dilatation of the chest is a *sign* of pleuritic effusion—a fact with which the ancients were familiar. It seldom exceeds two inches as a maximum. It is better marked in lean than in fat people, and in men than in women, especially in those with very large mammæ. Where it exists to any extent, it can be detected by the eye. The eye often detects the enlargement of the chest where measurement cannot do so; but in all cases we should look for dilatation of the chest. In measuring the chest you must never forget that the patient may possibly have a deformed spine, either congenital or the result of disease. Mr. Colles has very properly remarked, that the divarication of the ribs is not a certain symptom of emphyema; for in one case, for instance, he met with in which this symptom was well marked, the case turned out to be, not an emphyema, but *an abscess in the substance of the lung*: and in another case I shall detail for you presently, in which the side was dilated, the disease proved to be *fungus hæmatodes*.

In some cases there is an evident protrusion of the intercostal muscles, which, in the majority of cases of emphyema, cease to act. Dr. Stokes attributes this to paralysis from over-distension of the intercostals; but I am doubtful of this, for in some severe cases it is only partial, and in more acute cases you have it not. I look on it as a cessation of



motion for the time, but as the case improves the motion also improves. But whatever be the cause, one of the signs of the disease is immobility of the side.

[I look on Dr. Stokes's observations on paralysis of the intercostal muscles of such importance, that I think it due to him to quote them here at length.—J. S. H.] He says :—

“ I have already published my views as to the mechanism of the muscular displacement in empyema, and endeavoured to show that the phenomena are inexplicable by the formerly received doctrine of simple pressure from within ; but that a loss of tone, a paralysis of the fibres, was necessary before they yielded to pressure.\* Subsequent observations have only confirmed me in these opinions.

“ The peculiar smoothness of the side in empyema has been long described as a pathognomonic sign of the disease. It proceeds, as every one knows, from a yielding of the intercostal muscles, so that the spaces become obliterated, and thus the smoothness is produced. Further we find, as I have shown in a former paper, that in like manner the diaphragm yields until it may even become concave towards the chest, and convex towards the abdomen ; pushing before it the viscera which lie in the upper portion of that cavity.

“ But these phenomena are by no means so marked in the dilatation of the air cells, in which, as I have already shown, the disease may exist to a great amount, and the chest be extremely dilated, without any one of the appearances above mentioned. The intercostal spaces continue, in all cases, well and deeply marked ; and in one class of cases the

\* See Transactions of the British Association, vol. v., also my “ Observations on Paralysis of the Intercostal Muscles and Diaphragm considered as a new source of Diagnosis,” Dublin Journal of Medical Science, vol. ix.

diaphragm remains unaffected, even though the pressure be so great as to change the form of the chest.

“Let us now inquire why it is that this remarkable difference exists. By examining the circumstances of either case we may arrive at the explanation.

“In empyema, there is a combination of vital and mechanical causes. We have *inflammation followed by pressure*, and pressure from a liquid.

“In the dilatation of the cells we have only pressure, and this from an elastic fluid.

“Now in this circumstance of inflammation of the pleura, which causes the effusion in empyema, and *which continues to act long after the effusion has set in*, it appears to me that we have the explanation of the dilated state of the intercostals, and the yielding of the diaphragm.

“When a tissue such as a mucous or serous membrane is inflamed, we find that certain effects are produced on the muscular expansions or masses with which it is closely connected; their functions suffer, and we observe, first, an increase of innervation, as shown by pain and spasms; and next, a paralysis more or less complete. The same circumstances occur when the inflammation is seated in the muscular structures themselves, or in the cerebro-spinal centre from which they derive their innervation. In all these cases, whether of contiguous inflammation, of actual disease of the muscular fibre itself, or of inflammation of the brain or spinal marrow, we have produced, first, a *plus*, and afterwards a *minus* state of innervation. When the latter condition supervenes, the muscular fibres lose their contractility; and if the organ be a tube surrounded by fibres, it dilates; or if an expansion similar to the intercostals or diaphragm, it yields easily to pressure.\*

\* Abercrombie has shown that in ileus, the contracted portions of the tube are healthy, and that the morbid appearances are confined to the dilated parts; the loss of power being the true cause of the constipation.

“ Now the true explanation of the protrusion of the intercostals and diaphragm will be found to be, that they are affected with this paralysis following inflammation of a contiguous structure, that their contractile powers are lost, and that hence they yield easily to a pressure, which, in their healthy state (as we see in the vesicular emphysema, in hydrothorax, and the first stage of pleurisy), they effectually resist. But we must examine into the evidence of this theory of displacement of the thoracic muscles in empyema.

“ The first point of evidence is obvious when we reflect on the general effect of irritation on muscular fibre. Now in the case before us we may observe, that the phenomena are in accordance with this admitted effect. In the first stage of pleuritis we have great pain ; difficulty of respiration ; hurried breathing ; pain increased on a deep inspiration ; and all this *without protrusion of the intercostal spaces or diaphragm*, but rather with a spasmodic state of these expansions, conditions which accurately correspond to the plus state of innervation observable in the first stage of muscular irritation.

“ But in the more advanced periods, the reverse of all this occurs. The pain ceases, the dyspnoea greatly diminishes, the breathing becomes slower, *the diseased side is comparatively motionless, while the healthy one is acting with great power, and the intercostal spaces and diaphragm yield* ; the first causing the characteristic smoothness of the side, and the next, the depression of the abdominal viscera. I need hardly remark, that these circumstances correspond with the minus condition of innervation, or paralysis of the muscular fibres.

“ The next and most important evidence is the fact, that mere pressure seems insufficient for the phenomenon in question. If the theory which I have given be true, it should follow, that in other diseases of accumulation, where inflammation of the pleura was not present, but where there was merely pressure, this muscular protrusion should either not occur, or be much less marked. Now such may be observed to be the fact. Let us take Laennec's emphysema, hydrothorax, and enlargement of the liver as examples ; in all of

which there is pressure from within. Thus, in Laennec's emphysema, we have already studied the great enlargement of the chest, and the displacement of the mediastinum and heart, and have seen *that even when the diaphragm is flattened (as occurs in a certain class of cases), its innervation is not destroyed*. In hepatic enlargement we may see, also, evidences of pressure from the great tilting out of the side, and the state of the lung; while in hydrothorax, the pressure is demonstrated by the diminished volume of the lung, which, though a muscular organ, cannot avail itself of its powers in resisting pressure from without.

"But notwithstanding this pressure, it will be found that in all cases of emphysema and enlargement of the liver, and in many, at least, of hydrothorax, the intercostal spaces do not yield; a fact which may be constantly verified. I have lately observed three cases of symptomatic hydrothorax, in which, although the effusion amounted to several pints, and the corresponding lung was reduced in volume, neither the intercostals nor diaphragm were affected. The same occurs in the earlier stages of pleuritis, and the sub-acute effusions. In all these cases we may have great displacement of the side or thoracic viscera; yet there is merely pressure, and though the ribs are dilated, the intercostal spaces preserve their relative positions.

"The last point of evidence is the fact, that in some cases of empyema there occurs a *sudden* yielding of the diaphragm, which, up to a certain period, had preserved its natural position. This yielding may be as extensive as sudden, and is not necessarily accompanied by increase of effusion. How much more easily can we explain this interesting fact, on the supposition adopted, than on that of gradual pressure on a vitally resisting medium.

"From these observations we may safely conclude, that in empyema the protrusion of the intercostal spaces and diaphragm results from a paralyzed state of these expansions, and that pressure is secondary to inflammatory action causing paralysis, in inducing the yielding of the muscles.

“In my original paper on this subject, I suggested that the amount of intercostal paralysis might furnish a measure of the intensity of the disease, and be thus made available in prognosis; since then two instances have occurred, in which, from the absence of intercostal paralysis, I prognosticated the rapid recovery of the patients. In both, acute pleuritis had been followed by an effusion sufficiently great to cause extensive dulness of the left side, and to push the heart to the right of the mesian line; in one the disease was of ten days, in the other of nearly three weeks’ standing; in neither were the intercostal spaces or diaphragm protruded, but, on the contrary, these muscles were acting with vigour. In the first case, little was done, except confining the patient to bed, the heart returned to its position on the third day, and in a week all effusion was removed; in the second, on the seventh day of treatment, the posterior portion of the chest was clear, and presenting the friction sound. The recovery in both instances was rapid and permanent.”

Old books laid much stress on succussion or the gurgling of the fluid of empyema on shaking the patient; but I have no confidence in this symptom, even if it were present, being likely to be confounded with fluid in the stomach.

In a few of these cases, but rarely, we may detect a sense of fluctuation. The vibratory motion so sensibly felt by the hand when placed on the side of a healthy person whilst speaking is not to be felt in empyema. [A fact for the knowledge of which I believe we are indebted to Dr. A. Hudson.—J. S. H.]

Another sign we meet with, and we might expect, is a dislocation of organs, as the heart, the liver, &c. But we should inquire if this was always the case, for there are a few cases on record (one of which I dissected myself)

in which the heart pulsated naturally on the right side of the chest, the chief organs in the body, including the heart, liver, stomach, &c. &c., being transposed. As the effusion becomes removed, whether by absorption or operation, the affected side usually becomes narrow and contracted, thus leading, as long since pointed out by Laennec, to a permanent deformity of the figure.

It is really wonderful how rapidly a displaced heart will, under certain conditions, regain its normal position : thus I recollect not long ago seeing a girl who was suddenly attacked with violent pain about the region of the heart. The heart could be felt beating in the natural position. She was suddenly seized with dyspnœa, and before forty-eight hours effusion had taken place into the left side ; the heart was considerably displaced, and could be detected pulsating considerably to the right of the sternum. She was bled, blistered, and mercury was administered as speedily as possible, absorption of the effusion rapidly took place, and at the end of *three* days the heart had returned to its natural position. There was likewise a return of respiratory sound on the left side. She is now living and healthy ; slight dulness remains on the affected side with full respiratory murmur. This was the most rapid case of effusion into the chest that I ever met with.

As to the physical, or what I prefer calling the *auricular*, signs of empyema, we find always in cases of empyema that the unaffected lung is puerile. This is an uniform sign. Dulness of sound on percussing the affected side is always met with, except when there is an old adhesion of the lung, then you may have both respiratory sound and clear percussion.



I have said nothing about ægophony as a symptom of pleuritic effusion, nor do I think it an important feature, it is only to be met with on recovery, or where the effusion is not great. When present, it is a feature showing a small effusion into the thorax.

When, as Laennec says, the lung is completely hepatized without any accompanying effusion, there exists always a strongly marked bronchophonism, almost like pectoriloquism, in different points, and particularly towards the summit and roots of the lungs—a thing which never exists in the same degree or over the same extent in pleurisy or pleuro-pneumonia.

In emphyema, the lung is compressed upwards and backwards towards the mediastinum and spinal column, and converted, as this drawing, which I shall now send round the class, shows, into a small flattened mass, not larger than the shut hand; still, however, capable of inflation, but to a limited extent only, the neighbouring viscera, as already mentioned, thoracic, as well as abdominal, are displaced; thus, if the effusion takes place on the left side, the heart is dislocated to the right side, and the spleen, if enlarged, is, as observed by Stoll, pushed down into the abdominal cavity; if on the right side, the liver is pushed down; in both cases, the diaphragm is forced downwards, and rendered convex towards the abdominal cavity.

There are various diseases which may and which every day unfortunately are mistaken for emphyema; amongst those we may enumerate enlarged liver, pneumonia, pericarditis with effusion, fungus hæmatodes. With regard to the first, much credit is due to Dr. Stokes for having

established the differential diagnosis between an enlarged liver and an empyema, for it was he who, in his admirable "Contributions to Thoracic Pathology,"\* first drew the attention of the profession to many points in connexion with the diagnosis of *empyema of the right side*, on which subject he says :—

"It has long appeared to me that the difficulties of this diagnosis have not been sufficiently dwelt on in medical works. and I can say, that even at the present day, the disease is commonly mistaken for chronic hepatitis. *I know of numerous cases, where, on dissection, the liver was found not enlarged, but merely displaced by an empyema, the existence of which had been wholly unsuspected during life.* It is easy to understand how this mistake should be often committed; if we look at the symptoms there is a considerable similarity between those of a chronic pleuritis and a chronic hepatitis. The patient complains of a pain in the lower portion of the side, with a sense of weight; a dry cough; there may be an icteroid tint; there is a tumour in the right hypochondrium, and dilatation of the side. All these symptoms may be caused by either affection, and in such a case too many practitioners, acting on the prejudice of the day, could see nothing but a profound hepatic disease. Again, if we consider the most evident physical signs, similar difficulties will be found to exist. Both diseases produce a tumour in the right hypochondrium, with dilatation of the side; both cause dulness of sound on percussion in the lower portion of the right side, and feebleness, or absence of respiration, without resonance of the voice, so that in many respects the symptoms and physical signs are so very similar, that the diagnosis is one often of extreme difficulty. I trust that the following observations may, in some cases, be found to throw light on the question.

"We shall suppose that the patient presents the following

\* See Dublin Medical Journal, vol. iii., page 833.



group of symptoms and signs. The right side is dilated, and the patient feels a sense of weight in that situation. There is a tumour, evidently hepatic, felt in the right hypochondrium. The lower portion of the right side of the chest, both anteriorly and posteriorly, sounds dull, with absence of respiratory murmur, bronchial respiration, or resonance of the voice. All these, as we have seen, may arise from either affection. Now, if the case be one of enlarged liver, we shall observe the following circumstances:—1. Although the side is dilated, yet the intercostal spaces and ribs present their usual relations, *and hence we have a marked dilatation, with the hollows of the intercostal spaces distinctly marked.* This contrasts strongly with the smooth rounded appearance of a side dilated by an empyema. 2. The tumour in the hypochondrium is either an enlarged or a displaced liver. If it be the first, we find the tumour presenting a continuous surface and feeling of resistance from its most prominent portion, to where it can no longer be traced under the ribs, the lower margin of which seems tilted out. But if it be a displaced liver, *we find, between its most convex portion and the edge of the false ribs, a sulcus, evident to the sight and to manual examination, presenting much less resistance, and evidently the result of the space left around the point of contact of two convex bodies, one the upper portion of the liver, the other the most prominent point of the depressed diaphragm.*

[The following case by Dr. O'Ferrall shows the manner in which pleuritic effusion may simulate pericarditis with extensive effusion, and the comments of Dr. O'Ferrall thereon are most valuable (as, indeed, are all his communications), pointing out as they do the diagnostic differences of the diseases in question.—J. S. II.]

“The young man who was the subject of this disease was aged 19; he had been six weeks ill before his admission into St. Vincent's Hospital, and had been for five weeks of that time in a fever hospital in Dublin. The symptoms he pre-

sented were, dyspnœa, anasarea, with considerable turgescence of the face, and blue congested lips: pulse 140, but regular. The case having been considered by more than one expert stethoscopist to be pericarditis with extensive effusion, Dr. O'Ferrall proceeded to examine it, with the expectation of finding that disease; and, certainly, nothing, at first view, could be more like it. The patient lay on his back, slightly inclining to the left side. On percussion, the cardiac dulness appeared to extend beyond its normal boundaries; the heart pulsated a little above its usual place; it could be felt close to the ribs, and its action heard distinctly there without murmur or friction sound.

"The very superficial position of the heart, rendering its impulse so remarkably palpable, even while the patient was lying on his back, led him to doubt the existence of pericardial effusion. If the position had been different—if the patient had been sitting up and leaning forward, the heart might gravitate through fluid into contact with the parietes—but in that case a friction sound might be expected. The dorsal position, with evidence of contact, and absence of frottement, led Dr. O'Ferrall to the conclusion that no pericarditis existed.

"The chest was then examined, the patient having assumed a sitting posture. The dulness was found to extend over the whole of the left side, posteriorly as well as anteriorly. Upon placing the hands on the sides, and desiring the patient to speak, no vibration could be felt on the diseased side, while it was plain on the other. The intercostal spaces were slightly protruded. The motions of inspiration and expiration were less marked on this side than on the right. The respiratory murmur was very faint and distant. It was evident that an extensive accumulation of liquid existed in the cavity of the left pleura. The absence of displacement of the heart might perhaps be owing to adhesions of older date.

"The treatment consisted in cupping, blistering, and the exhibition of mereury, followed by tonics and diuretics.

Under these means the anasarca gradually subsided, a friction sound became audible over the back of the chest, and the dyspnœa diminished. According as the respiratory murmur increased, it was observed to be mixed with a crepitating rattle. He remained in a state of partial recovery for four months; but it was observed that his pulse continued very frequent, varying between 130 and 140; his urinary secretion, which had become copious, was now often defective in quantity; the dyspnœa began again to be troublesome. The mercury was exhibited a second time, but ineffectually. Anasarca again came on; the patient was attacked with hæmoptysis; and, finally, died somewhat suddenly.

“At the autopsy, the left pleura was found to be obliterated by adhesions, those near the anterior margin of the lung being fibro-cartilaginous and evidently ancient. Nodules of pulmonary apoplexy were distributed through the left lung.

“The pericardium, when cut open, was found to be smooth and polished on its internal surface, no trace of false membrane being present on any portion of its extent. The heart was enlarged, soft, and flabby, its cavities dilated and full of blood; the death had been by syncope; no valvular disease existed.

“The morbid appearances were thus those of extensive pleuritis, pulmonary apoplexy, and enlarged, softened heart. But the question might arise, whether there might not have also existed a pericarditis, all traces of which disappeared under the treatment employed. But such a supposition was incompatible with the differences existing between the pericardium and pleura. If treatment had removed the effusion from the pericardium, why had it not prevented the organization of exuded fibrine in the pleura, and have also caused its absorption? If the extreme continued frequency of the pulse, without irregularity, and the violent action of the heart, be ascribed to a supposed pericarditis, let it be remembered that that lesion must have been cured, according to the hypothesis, four months before death, while the pulse remained as before.

“Dr. O’Ferrall attributed the anomaly of the heart’s not being displaced to the existence of old adhesions at the anterior margin of the left lung; and he suggested that this might have been the cause of the cardiac distress which the patient suffered. Under ordinary circumstances, the heart, becoming displaced by the effusion, escapes, as it were, from the pressure; but when tied to the parietes, and compressed by a weight of liquid from behind, it becomes placed under conditions analogous to those of effusion into the pericardium, and is consequently liable to simulate that disease. The displacement which usually occurs may in this point of view be regarded as salutary, and the slight degree of inconvenience often endured by patients in this state seems to favour the conjecture.”—[*See Reports of the Proceedings of the Pathological Society of Dublin, January 29, 1846.*]

The diagnosis between empyema and pneumonia is evident enough, provided the latter be uncomplicated; thus, the character of the pain in the early stage of the pleuritic effusion is sharp and lancinating, in pneumonia dull and heavy. The expectoration in empyema is frothy, transparent, and mucous, or (as in Geoghegan’s case), it may, in the advanced stage, be muco-purulent; but in pneumonia it is viscid and rusty. In empyema there is an absence of respiratory murmur at the seat of disease: in pneumonia a crepitant râle. In empyema bronchophony is absent, whilst in pneumonia it is increased. In both there is dulness of the side; but in empyema the side bulges, and the site of the dulness, unless indeed it happens to be a case of circumscribed empyema, changes with the position of the patient. It must not, however, be forgotten that pneumonia may, and often is, complicated with

pleuritis terminating in effusion, in which case the diagnosis will be rendered somewhat difficult. Here I would impress on you that before forming your diagnosis in empyema, you should combine all the signs and symptoms together, and not depend on any individual sign or symptom.

Before concluding this part of our subject, I may be allowed, in passing, to mention, that there is a feature sometimes but rarely met with in pleuro-pneumonia, which we have now an opportunity of witnessing in Johnston's case in No. 2 ward, and which, when present, may embarrass the physician—I allude to the presence of cholesterine in the sputa, in which case the expectoration will be of a deep yellow bilious hue, although (as in Johnston's case) the patient may not be jaundiced. I have seen about four cases of this kind. In one of them the sputa were of a bright green colour. That case terminated fatally. Indeed, the supervention of jaundice, or the presence of cholesterine in the sputa at the close of any acute disease, is a most unfavourable symptom. In another case near this hospital the sputa were slightly tinged, no tinge in the urine; in fact, it was remarkably clear. In the present case also there is no tinge in the urine.

Before we enter on the treatment of pleuritic effusions it will be necessary to make a few observations on their morbid appearances or pathology.

The serous sacular investment of the lungs is, perhaps, more liable to inflammation than any other analogous membrane in the human frame; indeed, inflammation of this lining investment so frequently concurs with other inflammatory affections of the true pulmonic tissue, that few

bodies on post-mortem inspections are, as every well-informed pathologist knows, found perfectly free from pleuritic adhesions, and it is necessary to bear in mind that this is especially the case in phthisical patients; thus Louis states that in 112 persons who died of phthisis, he found but *one* in whom there was a perfect freedom from pleuritic adhesions.

With respect to the morbid appearances exhibited as the results of pleuritic effusions, those appearances, as you might *a priori* anticipate, differ considerably in different cases; thus, for instance, when the affection is of a recent occurrence, the matter effused is of a fluid nature, either serum, pus, albumen, or soft lymph; after some days or weeks it is much less fluid, the fluid parts being those first absorbed, and in a still later period the parts become solid when the absorption is fully completed. In the most favourable condition of the constitution the solid parts left behind assume the appearances of true serous membranes, but when the disease is more sluggish and the constitution in a less favourable state the appearances of the pleuræ will be of a very different nature, which in books you will find described under the head of thickened pleuræ or fibro-cartilaginous deposit. Laennec, however, shows clearly that the pleuræ are not thickened, but that there is a deposition on both the parietal and visceral surfaces of that membrane, the deposit is often even of a true ossific nature.

[Dr. Law attributes this formation of bone, the increased growth of the cartilage, and also that of the ribs, to the same cause that produces hyperostitis in the portion of the cranium corresponding to a deficiency of the cere-



bral substance, many examples of which had been brought under the notice of the Pathological Society by Professor R. W. Smith, and this cause he conceives to be the undue atmospheric pressure, arising out of the condition of the internal organs, no longer contributing their share towards the counterpoise of this pressure, which, affecting these other tissues, produced in them an increased growth to meet the emergency ; and in one case imparted an ossific deposition to the portion of the false membrane more directly exposed to this pressure.—J. S. II.]

With regard to the thickness of the membrane left after pleuritic effusions, it differs much in different cases. I have myself seen it fully one inch and more in thickness.

In phthisical patients there is often a thickening of the pleura at the apex of the lung. Laennec describes this condition of the lung correctly : the external layer of the membrane is opaque, fibrous, the internal semi-transparent, and like the intervertebral cartilages. In all effusions the most solid part is that next the membrane, as in croup. Indeed I believe I am safe in saying, that up to this no differences, so far as chemical or microscopic examinations go, have been pointed out as existing between the false membrane of croup and that resulting from inflammation of serous cavities. As I before said, the term empyema should be confined to the existence of pus into the cavity of the pleura.

There are other fluids beside either pus or serum into the pleural cavity ; thus, for instance, in acute pleuritis, you may have an effusion of blood, sometimes lymph, at other times lymph with fluid matter.

The quantity of fluid which the pleural cavity in a diseased state may contain is most astonishing; thus I have seen several pints discharged from it. In one case already on record, where the Surgeon-General was the operator, no less than fourteen imperial pints were drawn off.

Laennec calls the effusion of lymph dry pleuritis. You may either have solid lymph or pure serum; however, the secretion is generally more or less of a mixed kind—lymph, blood, serum, or pus.

I shall only make one other remark as to the pathology of pleuritic effusions—viz., if we look to the walls of a phthisical cavity, do we not, on examination, find them lined by this very kind of membrane, and it partakes of the nature of these diseases where tubercle is formed.

[The false membrane lining the pleura in empyema has been found studded with tubercles. Dr. Law (see Transactions of the Pathological Society of Dublin, March 21, 1846) considers the deposition of the tubercle on the false membrane, taken in connexion with the blood effused, to be proof of the inferior type of the inflammation.—J. S. II.]

Pleuritic effusion, then, is often of a strumous character. When pleuritic effusion attacks one member of a family, phthisis another, the former often lives, the latter dies. The effusion is often mistaken for phthisis, and I do not think that this fact has been sufficiently dwelt upon, and yet it is one not alone of practical but of vital importance.

Occasionally in empyema Nature forms an outlet for the contents of the pleural sac by means of an opening



either into a bronchial tube or through the thoracic parietes, and in this manner I have known the lives of a few patients to have been saved, but such cases are, I regret to say, few indeed. When an empyema makes its way to the surface through the thoracic parietes the point of exit is not, as you might at first be led to expect, situated towards the base of the thorax, or, in other words, at the most depending part of the purulent collection ; on the contrary, it is generally formed high up between the third, fourth, or fifth ribs, and sometimes even higher ; indeed, there are cases on record where the opening took place, remarkable to say, above the clavicle. It is right here to inform you that when empyema makes its way to the surface through the thoracic parietes, the point of exit presents an appearance which resembles to a great extent the external characters of an anthrax, by which, however, you must take care and not be misled.

## LECTURE III.

## ON THE TREATMENT OF EMPYEMA.

THE treatment of empyema has very conveniently been divided into Medical and Surgical. With regard to the first, when we meet with empyema in the acute form, the patient should be bled, according to his age, constitution, and previous habits of life, placed under the influence of mercury as rapidly as possible, and after the inflammatory symptoms have been subdued by general or local depletion, or by both, but not till then, we should have recourse to counter-irritation. By this mode of treatment, when the patient's health is good, and the lungs sound, we may have a speedy absorption of the effused fluid and a perfect recovery; but in such a case much will depend on the remedies being applied in time. In these cases of recovery, as I have before observed, there is, generally speaking, dullness of the side left behind, which may remain for life, and this practical fact you must hold in recollection.

When, on the other hand, we meet with empyema in a more chronic form, we seldom have recourse to general or active depletion, having to contend with a slow disease. Here local bleedings are best—here I prefer repeated cuppings (provided always that they are performed by a dexterous operator) till the inflammation is reduced. These

should be followed by counter-irritation, and for this purpose I believe small repeated blisters are best. We should at the same time administer mercury to increase the action of the absorbents: but in these chronic or subacute cases, we should bear in mind that many of the patients are of a delicate strumous habit of body, and we should therefore give the mercury cautiously, so as not to undermine the constitution. On this account I look on mercurial frictions as of great value in these cases, as they do not lower the tone of the digestive organs, in which, however, I confess I am only carrying out the practice of Laennec, to whom we are indebted for many points of useful therapeutic information. Laennec in these cases very properly gave preference to mercurial inunction, which method he carried to a considerable extent.

For several years I was in the habit of using the common mercurial ointment of the *Pharmacopœia* in these cases, but of late years I find a combination of iodine and mercury best, especially in private practice. I generally order it thus:—

℞ Hydrarg. prot. iod. gr. iii.

Adep. suillæ præp. ℥i. M.

This should be steadily rubbed in at stated intervals till the wished-for effect has been accomplished. The protoiodide of mercury acts in three ways—viz., as a mercurial, as an iodide, and as a powerful rubefacient. It, on the latter account, should not be rubbed too often to the same part of the integuments, and its action on the system should be sedulously watched; but after all our exertions sometimes the case will remain stationary, and in such a

case we should support the system by light nourishment, and have recourse to diuretics : but the success of the diuretic treatment will, I well know from experience, much depend on our first having subdued inflammatory action ; and secondly, on the judicious selection of suitable diuretic medicines. The diuretics that you may use here are numerous—viz., sweet spirits of nitre, acetate of potass, digitalis in infusion, powder or tincture, or the hydriodate of potass, which latter is peculiarly indicated in cases when the patients present a strumous diathesis.

Diuretics are, as you might anticipate, more likely to be followed by success where the effused fluid approaches nearer to serum than to pus.

#### PARACENTESIS THORACIS, OR THORACENTESIS.

Sometimes in empyema, whether acute or chronic, notwithstanding our best efforts, we will fail to obtain absorption of the contents of the pleural cavity, in which cases the quantity of fluid effused may become so abundant as not only seriously to interfere with the patient's comfort, but it may even, by its pressure on the lungs and heart and mediastinum, threaten life by suffocation (apnœa) or by syncope. In such cases we have no alternative left, our only hope of saving or prolonging life being the immediate withdrawal of the fluid from the thorax by means of paracentesis thoracis, on which subject I shall, as briefly as possible, give you the results of my own experience : and firstly, it is but right to inform you that I have been present at many operations for paracentesis thoracis, and

that the successful cases were those in which purulent matter escaped. In *all* the cases where serum was the fluid effused, the termination was fatal. This is the result of my own experience, but I don't say that such cases may not have recovered under others. Indeed, I may go further and tell you of a case I saw lately, where pointing took place, and a serous fluid tinged with blood escaped, and where the result was unfavourable; whilst, on the other hand, I recollect, not very long since, a case having occurred in this hospital that pointed in the base of the right side of the thorax, from which a great quantity of pus was poured out, and the patient ultimately recovered. The results, then, of my experience are these, that in the operation of paracentesis thoracis, the greater the quantity of pus the greater is the chance from the operation.

In my first lecture I laid stress, as you may recollect, on the utility of the explorator in ascertaining the true nature of the fluid in effusions into the pleural cavity, and here I think it right to detail to you a case which some years ago fell under my observation, and which made a great impression on me, proving, as it did, the value of the explorator. A girl, aged 14, was the subject of it. The right side was much dilated; liver pushed down; intercostals puffed out; motion of the side had ceased; side dull on percussion, with total loss of respiration; large blue veins ramifying over the affected side; she had a small dry cough. It appeared as if a case of chronic pleuritic inflammation with copious effusion. Mr. Colles, Sir Philip Crampton, and myself, held a consultation on the case. We decided on puncturing the thorax, which

was accordingly done, and nothing escaped but blood. The puncture was instantly closed up, and the girl was removed to the country. The medical gentleman in the country, under whose care the patient was subsequently placed, being under the same impression as we were at first, repeated the operation of paracentesis thoracis, and wrote up to say that the case having terminated fatally, a post-mortem examination was made, and *an enormous fungous tumour* was found to occupy the entire of the right side of the thorax, pushing the lung against the spine. In this case it might be supposed that the appearance of the enlarged blue veins might have led us to suspect the presence of a tumour; but this is no evidence, for at this moment I am attending a case in which the affected side is perfectly mapped over by enormously dilated veins, where there is a copious pleuritic effusion on the left side, with the heart displaced; however, absorption of the fluid is rapidly going on, the heart is returning to its natural position slowly; therefore, the enlarged veins in the foregoing case could not have pointed out much.

The carrying out of the operation of paracentesis thoracis obviously comes within the province of the surgeon, and therefore here requires but a very few observations from me; but if I might be allowed to give my opinion on the subject, I would strongly recommend an earlier recourse to the operation than has, generally speaking, been practised, and I would further recommend the surgeon to imitate Nature, and open the thorax between the fourth, fifth, or sixth ribs, and not lower down, as heretofore has been, in my opinion, unwisely done.

[The frequent want of success which followed the operation of thoracentesis, carried out as it was in former days merely as a *dernier ressort*, held out but little encouragement indeed to the physician to recommend it as a curative measure, or to the surgeon to perform it, as can readily be gathered from the following gloomy statement published on the subject by Dr. Bennett some time since—viz., “Boyer had performed the operation several times, but had never saved a single patient; Dupuytren had seen only two successful cases in fifty, in which he had either himself operated, or had seen the operation performed by others; Sir Astley Cooper has seen only one successful case; Gendrin had not had one which was successful out of twenty cases in which he operated.”

Owing, however, to recent improvements, both as to the time and mode of operating, we can fortunately, in the present day, offer hopes of success from thoracentesis to a greater extent than our predecessors could have ventured to have done, the publication of innumerable successful cases of thoracentesis having established beyond doubt the advantages to be obtained by an early recourse to the operation of tapping the pleural cavity in both empyema and acute hydrothorax. Thus, for instance, Dr. H. M. Hughes and Mr. Cock of Guy's Hospital, in a conjoint paper published by them in the second volume of “Guy's Hospital Reports,” New Series, 1844, give the following results of their experience:—Of these (twenty-five) cases in which paracentesis thoracis was once or several times performed, thirteen may be fairly stated to have recovered, so far as regards the effusion into the pleural cavity; two

may be justly mentioned as having at least partially recovered; one of these had, after seven years, a fistulous opening into the pleura; and the other has still some, though comparatively a very small quantity, of fluid in the right pleura, but feels so much better as to be actually in search of employment in his profession; ten have *ultimately* died of other diseases generally connected with that for which the operation was performed, but entirely independent of its performance. Of these ten cases ultimately fatal, six have died of phthisis; one of gangrenous pulmonary abscess of the opposite side; one after three months of chronic pneumonia; one rather suddenly with hydrothorax in the other pleura; and one, a case of pneumothorax with effusion (in which the operation was performed simply with the hope of affording temporary relief), pneumonia and pericarditis.

In the year 1844, Dr. Hamilton Roe, in a very able and well-timed paper\* “On Paracentesis Thoracis as a curative measure in Empyema and Inflammatory Hydrothorax,” read before the Royal Medico-Chirurgical Society of London, says (when alluding to the opinion that very generally prevailed at the time amongst the most eminent members of our profession, that the operation of tapping the chest is one which affords but little hope of curing either empyema or hydrothorax): the names of Boyer, Dupuytren, Sir A. Cooper, Laennec, Townsend, Gendrin, and Stokes, are found amongst those who speak unfavourably of paracentesis thoracis, and as no modern physician has

\* Medico-Chirurgical Transactions, vol. xxvii., p. 198, 1844.



recommended it as a curative measure, it cannot excite surprise that it should have fallen, as it has done, into very general disrepute, inasmuch as the judgment of a large portion of the profession must, in the absence of personal experience, be influenced by the opinions of men of such high standing. To ascertain, however, how far the objections to it were derived from the results which followed its performance, I collected all the cases of this operation which had been published in the English language between the years 1812 and 1832 inclusive, presuming that the knowledge of auscultation and percussion had by that time become so general as to ensure tolerable accuracy of diagnosis, and I found that the recoveries were to the deaths in the proportion of twenty-eight to eleven. These cases are arranged in a tabular form, and certain particulars are stated in separate columns to enable the Society to form a judgment of the causes of the failure or success of the operation. [Here follows the table above alluded to of thirty-nine recorded cases, at the end of which Dr. H. Roe appended notes thus:—N.B.: In not one of these thirty-nine cases did the operation prove fatal, although it was performed in various ways. It is true that M. Dupuytren's patient (12) died of suffocation the day after his chest had been tapped, evidently from air accumulating in the pleura; but this danger might have been obviated, as will be seen hereafter. Of thirty-nine patients upon whom paracentesis was performed, eleven only died. Of these, twenty were cases of empyema, of which fourteen were cured and six died; thirteen were cases of hydrothorax, of which eight were

cured and five died ; two had hydatids, both were cured ; and four were cases in which the quality of the fluid is not stated : they all recovered. In the same paper, Dr. H. Roe gives a second table of twenty-four cases of pleuritic effusion, treated by paracentesis, either under his own observation or that of his friends, in which he has inserted in separate columns the most material features of each of them, which furnish the following important and encouraging results—viz. : Of twenty-four cases upon whom the operation was performed eighteen recovered, six died ; nine of these were cases of empyema, of which eight recovered, one died ; thirteen were cases of inflammatory hydrothorax, of which nine recovered, four died ; one was mechanical hydrothorax—relieved ; one pneumothorax—died.

Mr. B. Philips\* has placed on record one hundred and twenty-two cases in which paracentesis thoracis was performed, thirty-one of which examples were of pyothorax, (empyema), and nine of hydrothorax ; of the former twenty-six, of the latter six were cured.

Mr. Smyly of this city (Surgeon to the Meath Hospital), in a recent paper "On Thoracentesis in Empyema,"† in recording seven cases in which he operated, of which five were successful, observes—"The result of my experience is, that while I have seen many relieved, and some snatched, as it were, from death by the operation, I have never seen any injury done by it ; while I have to regret cases allowed to perish without this effort to save

\* Medico-Chirurgical Transactions, vol. xxvii.

† See Dublin Quarterly Journal for August, 1859.

life being made. One was a little boy whom I was asked to see by a friend. He was cautious, and wished to have another opinion before doing it. The gentleman who was consulted, hearing bronchial respiration, dissuaded from the operation. On post-mortem examination it was found that the case would have been a most favourable one for it."

Finally, on the Continent, the operation of thoracentesis has been followed amongst adults by very satisfactory results, especially in the hands of M. Trousseau.\* But it is here right to premise that the success of the operation of thoracentesis will mainly depend—firstly, on the suitability of the cases for the operation; secondly, on the period of its performance; and thirdly, on the point of election chosen for the introduction of the trocar and canula, and the mode of conducting the operation.

With regard to the first and second points, Sir Henry Marsh has so clearly entered into and illustrated them by cases in his previous lectures, that we shall now proceed to a brief consideration of the third point.

It is scarcely necessary to say that the majority of surgeons of the present day seldom proceed at once to tap the chest without first exploring the cavity of the pleura, and perhaps the very best instrument for the purpose is that invented by Dr. Babington, to be had at all surgical instrument-makers, which is thus described by Mr. Cock, who has the merit of having made it generally known to the profession. It consists of a needle contained in the smallest-sized canula; this is passed between the ribs into the sus-

\* See *Lancet*, vol. i., p. 99, 1855.

pected spot; the needle is withdrawn, and the escape of fluid from the tube at once indicates the existence and the nature of the abnormal secretion. Mr. Cock very properly, in my mind, prefers Dr. Babington's explorator to the grooved needle invented and used for the same purpose, which, as he remarks, although admittedly applicable to many other purposes, is at best a clumsy and inefficient instrument for exploring the chest, and frequently has left us as much in doubt after its withdrawal as previous to its introduction. The groove is so easily obstructed by the tissues through which the instrument passes, or by small particles of lymph, as to render the escape of fluid which may really exist a matter of great uncertainty; while, on the other hand, provided the needle have to traverse an œdematous condition of cellular membrane, so frequently the case, the serum which exudes from the subcutaneous tissue may be supposed to come from the pleural cavity. Thus the evidence afforded by the instrument, both positive and negative, is alike fallacious, and its liability to this double deception renders it nearly useless.

Mr. Cock believes that for the operation of paracentesis thoracis it will be found most convenient to let the patient sit *across* the bed, so as to admit of his body being readily lowered and supported over its edge, and he says that the spot having been determined upon, it is advisable to make a small puncture in the skin, first at the upper edge of the rib, with a narrow-bladed lancet, through which opening the exploring needle, and subsequently the trocar, may be inserted. [Here, however, it may not be out of place to state that many of the most experienced surgeons con-

sider it as unnecessary to make a preliminary incision in thoracentesis as in paracentesis abdominis, or in the withdrawal of the fluid from the tunica vaginalis testis, or in the operation for ovarian dropsy, but prefer plunging the trocar at once into the cavity of the pleura, as was first practised by Baron Dupuytren.—J. S. H.] After describing the depth to which the trocar must be passed, Mr. Cook remarks, that the remainder of the operation consists of getting rid of as much fluid as the strength and condition of the patient will bear, and carefully avoiding the admission of air into the cavity. On withdrawing the trocar the fluid will at first be found to flow in a steady and equable stream, slightly augmented in force at each expiration. After the lapse of a shorter or longer period the fluid will become checked at each inspiration, and then the body of the patient should be gently lowered into a horizontal posture, and laid slightly on the affected side, so as to bring the cavity directly over the opening, and in this position he should be duly supported by assistants. The fluid will now recommence flowing in an uninterrupted stream; and when it begins to flag, a still further quantity may be obtained, if the state of the patient permit it, by directing an assistant to make steady and continuous pressure on the lower part of the chest, by grasping it on either side with the hand. This may be kept up for a period varying from a few seconds to a minute, until a continuous stream can no longer be obtained, when the canula should be immediately withdrawn. The greatest care should be taken to remove the tube, and thus close the opening while the chest of the patient is yet in the grasp of the assistant;

for if he relax the pressure while the communication with the pleural cavity be still open, air will infallibly rush in. During the whole process of evacuation the unremitting attention of the operator should be directed to the stream of fluid, which he should never allow to become completely interrupted during the effort of inspiration. The admission of the slightest quantity of air is immediately indicated by a peculiar sucking noise which cannot be mistaken, and should be the signal for the prompt withdrawal of the canula. The wound requires nothing but the application of a small dossil of lint and strip of adhesive plaster, and the patient may then be laid down in bed if he complains of faintness. During or after the operation, some wine or ammonia may be given.

Formerly the place of election adopted by surgeons for the operation of paracentesis thoracis was the most dependent point in the anterior and lateral parts of the chest; and in their anxiety to steer clear of the lung, bound down perhaps by adhesions, it has been proved by dissection that many an operator of old not only transfixed the diaphragm, but likewise the liver, spleen, or kidney. Now, however, that we can, without fail, determine by percussion and the aid of the stethoscope the exact position of the lung in empyema, there can exist no doubt that Sir Henry Marsh's recommendation (in which he is joined by some of the best modern authorities) to imitate Nature by giving exit to the fluid in cases of empyema by choosing a higher point of election than formerly advocated, should be adopted, provided always that the position of the lung will admit of its being carried out.

Two warmly controverted questions here demand our serious attention—viz., 1stly, whether the opening in thoracentesis should be a direct or a valvular one? 2ndly, whether the entire of the collection of fluid within the chest should be withdrawn at first or by degrees?

The foregoing questions are of such interest that it may be well here to quote a few of the leading authorities (the space allotted to those lectures not admitting more) on those points of practice, and I shall not apologize for commencing with the clinical remarks delivered thereon some years ago in Steevens' Hospital by the late Mr. Colles—the gentleman to whom I had the good fortune to serve my apprenticeship, and whose vast experience as one of the leading surgeons of Ireland for a long series of years renders every opinion of his on questions in surgical practice of the greatest possible value.

Mr. Colles says:—"In operating on a case of empyema, I think that it is better not to make a valvular opening but a direct one. I only let out a portion of the fluid at first, I then plug up the wound, and let out another portion of it the next day; by this means I think we gain something, for if the patient does not escape fever, I would say, from my experience, that it will be much milder."

Laennec says, when speaking of the operation for empyema, which, it may be observed, he says, "is rarely followed by success," although he states he repeatedly performed the operation, using a very small trocar, "but without ever having obtained any permanent benefit from it." . . . "If this should ever prove successful, I



think it will be in cases of acute empyema, in which *successive punctures* (the italics are mine, J.S.H.) might perhaps at once aid the absorption and accelerate the conversion of the false membranes."

Dr. Stokes,\* admittedly a high authority on every circumstance connected with diseases of the chest, observes :

"The mode of operation by the repeated removal of small quantities of fluid, as recommended by Morand, should in all cases be preferred; but particularly in chronic effusions, where the lung has been long compressed, and probably atrophied. Time must be given for its gradual development, for the restoration of its circulation, and for the return of innervation to the intercostals and diaphragm. The great necessity for this mode of operation will be, of course, *greater* where the fluid is purulent, than in the serous effusions; indeed, in chronic cases, I would recommend that not more than a few ounces of fluid should be withdrawn at each operation."†

Before concluding this subject, it may be well to place the reader in possession of Reybard's operation for paracentesis thoracis, as modified by M. Trousseau, in which, however, as will be seen, the point of election is as usual too low down in the thorax :—

"The patient is to be placed on the edge of the bed, taking care that he shall experience the least possible motion.

\* "Stokes on Diseases of the Chest," page 523, 1837.

† See Morand, "Mem. de l'Académie de Chirurgie," also Boyer, "Traité des Maladies Chirurgicales," who gives a case remarkably illustrative of the danger of complete evacuation.



in order that the portions of false membrane, which would otherwise be detached, may not float in the fluid and obstruct the canula; the trunk should be elevated. Having placed the patient in this position, an imaginary line is to be drawn from the anterior edge of the axilla to the level of the eighth rib, a little behind which spot the puncture should be made. A small incision is first made with a lancet through the skin, as if for the operation of venesection; the integument is then to be drawn upwards with the fingers, so that the incision may correspond to an intercostal space. The canula is passed through the centre of a circular piece of goldbeater's skin or pig's bladder previously moistened, which is then tied firmly round its neck, so as to project over the orifice for some distance. The trocar and canula thus armed are pushed into the chest where the skin had been cut, to the depth of an inch or an inch and a half. As soon as the operator feels the canula grasped by the muscles, the trocar is to be withdrawn, when the fluid gushes out. If a shred of membrane or an albuminous flake opposes the passage of the liquid, a double-eyed gum-elastic probe, of a little less calibre than the canula, is procured. The goldbeater's skin is to be partially opened, and the probe introduced into the canula; it removes the obstruction, while its eyes give passage to the fluid. This method was devised by M. Lenoir. The removal of the fluid must be assisted by steady pressure on the abdomen and on the chest; and when it has ceased to flow, the trocar is to be rapidly withdrawn. The skin instantly falls back, the superficial and deep openings no longer correspond, and the only

dressing required is a small piece of court-plaster over the wound. At the same time that you relax the chest and abdomen, the air, drawn in by the tendency to a vacuum in the cavity lately filled with serum, rushes through the bronchial tubes, extending them and expanding the lung, which partly resumes its normal dimensions, allowing the respiratory murmur to be again heard over two-thirds of the chest, provided the effusion was recent and the adhesions not very firm.”—*Journal de Médecine*.—J. S. H.]

## LECTURE IV.

## THORACENTESIS IN PNEUMOTHORAX.

I HAVE so far confined my observations to the operation of thoracentesis for simple empyema ; but there are cases in which air is contained within the pleural cavity, constituting the affection to which M. Itard gave the name of *pneumothorax*\*—a disease we shall speak more of hereafter ; but I wish here, in passing, to place you in possession of the fact, that all the cases of pneumothorax I have seen operated on by thoracentesis, ultimately died, although they were all relieved for a longer or shorter time by the interference of the surgeon. The operation palliated symptoms, but did not save life.

Once and once only whilst I was sitting at the bedside of a patient who was the subject of tubercular disease of the lungs, he was suddenly affected with a sensation as if something had burst inwards ; he was seized with dyspnœa, and apparently was in a dying state, and I left him under the impression that he could not last through the night ; however, the next morning, to my astonishment, he was better, and on examination we found that there were both air and fluid in the pleural cavity, and we came to the conclusion that a tubercular abscess had in all probability opened into

\* Dissert. sur le Pneumothorax, &c. Paris : 1803.

the bag of the pleura. We then had a case of empyema with pneumothorax. Possibly the effusion took place both from the bursting of the abscess and from inflammation excited in the lining membrane. In this case we determined on operating. We first selected a spot, but subsequently changed our mind, and operated elsewhere, fortunately for us; for in the place first proposed, if opened, we should have been disappointed, for there was a thick layer of lymph extending from one pleura to the other, being at least two inches thick; however, we changed our position to a place higher in the thorax, and gave exit to a quantity of sero-purulent matter. The operation mitigated his sufferings for about one fortnight; all went on well till the end of that period, at which time a sense of suffocation, with great dyspnœa, set in, accompanied by a crepitus in the base of the right lung. He died on the fourth or fifth day, and on making an examination we found, as we expected, the empyema with the puncture in the pleura, and the left lung collapsed, together with the tubercular abscess and its opening into the pleural cavity. There was also a small tubercular abscess in the upper part of the right lung, with the base of that lung in the first stage of pneumonia. This lung was studded with small miliary tubercles. The pneumonia was in this case the immediate cause of death. The operation palliated, but did not save life; indeed, as in the last case, where there was such extensive disease, you could not hope for it.

[The sudden and unexpected manner in which an unfortunate patient already the victim of phthisis pulmonalis

may be attacked by pneumothorax, is also well exemplified in the following instance which has been detailed by Dr. Corrigan,\* whose admirable remarks on the case are well worthy of the recollection of the practical physician.—J. S. H.] :—

“John Burke, aged 23, was admitted to the Whitworth Hospital on the 20th instant. For the last twelve months he had been subject to cough, with some difficulty of breathing, but was not obliged to discontinue his occupation, as a servant, until about a month previous to his admission, at which time the cough became more troublesome and the breathing more oppressed, and for these symptoms he sought admission.

“Slight dulness, together with mucous r  le, was detected under the right clavicle, signs which were sufficiently explained by the subsequent discovery of red solidification and some tubercular deposition in the apex of the right lung. In the left lung the signs of phthisis were also evident.

“On the 25th, while the patient was sitting on the night chair, dyspn  a became *instantaneously* intensely urgent, the countenance indicated great obstruction to respiration, the skin grew cold, and he panted laboriously for breath. On removing him to bed and examining the chest the whole of its left side sounded clear on percussion, and the heart was felt pulsating strongly at the right side between the fifth and sixth ribs. Succussion indicated the presence of fluid and air in the left side, but no *bourdonnement amphorique* or metallic resonance was perceptible when he spoke, nor ringing sound when he coughed. Thus there

\* See Proceedings of the Pathological Society of Dublin—  
“Respiratory Organs.”

was well-marked evidence of a large quantity of air and of some fluid in the chest, but the signs which indicate a free transit of air, or *permanently* open canal, between the large bronchial tubes and the cavity of the pleura, were absent—viz., bourdonnement amphorique, which is produced by the free blowing backward and forward of air through the fistulous opening, and metallic resonance of voice and cough depending on the same. The man died in the evening of this day, and, on making examination, the left side of the chest, when opened into, gave exit to a gush of air, and the heart was found in the position at which it had been felt to pulsate during life. The right lung did not present much appearance of disease, but had at its upper portion tubercular depositions in two or three places. At the posterior and lower part of the upper lobe of the left lung a small, nearly circular opening, of about three lines in diameter was found, surrounding which was a deposition of recent false membrane. The circular orifice in the pleura communicated with a tubercular cavity of the size of a pigeon's egg, the wall of which next the cavity of the pleura was soft, flexible, and thin, and capable of lying down on the opposite wall and closing the orifice of the bronchial tube opening into it, just as the pliable valve of an air-pump would lie down upon and close the opening covered by it.

“The points to which Dr. Corrigan wished to direct attention were these—the cause of death and the power of affording relief in such cases as the present. Dr. Corrigan's view of the case was, that on the rupture of the pleura taking place, a rush of air into the cavity of the pleura at once occurred; that by each successive effort of the patient to inspire and relieve himself fresh additions were, for some time, made to the quantity of air admitted, until the cavity of the pleura was filled and distended; that,

from the flap-like covering of the tubercular cavity, none could get back again into the bronchial tubes; and that thus this confined and condensed air became a distending power suddenly forcing the heart over to the right side, and compressing the right lung, and thus producing suffocation. Dr. Corrigan was of opinion that such a case can be diagnosed by the concurrence of the signs which indicate pneumothorax, as in this case—viz., sudden dyspnœa, tympanitic sound on percussion, immediate displacement of the heart to the right side (when the attack is on the left), and succussion, with the absence, at the same time, of the signs which are owing to the free passage of air through the fistulous communications—viz., *bourdonnement amphorique*, and metallic resonance of cough and voice; and hence, in such a case again occurring, Dr. Corrigan would recommend the passing of a small trocar through one of the intercostal spaces, to give exit to the compressing air, which the flap-like covering of the tubercular cavity prevents from escaping. It would not, of course, cure the disease, but it would prolong life and diminish suffering; and many have lived with pneumothorax for a great number of years."

About the same time I saw the most extensive case of empyema I ever witnessed; sudden and unexpected effusion took place, and what was curious, some of the matter escaped into the cellular membrane about the diaphragm, and lodged itself to the amount of several ounces round the testicle of the affected side, together with much accompanying pain and sense of fluctuation. We operated, a good deal of fluid was drawn off, of a dirty red colour. This case terminated fatally, and on examination we found extensive gangrenous condition of the pleura costalis, as also

of the portion attached to the lung. The operation here was performed to palliate, not to cure.

[As the question with regard to the advisability of the operation of thoracentesis in pneumothorax, the result of perforation of the pulmonary pleura from disease, rests like similar questions altogether on authority, I think it right to give further publication here to the two following cases in point, already recorded by Drs. Law and McDowel,\* as they are especially valuable, proving as they undoubtedly do the extraordinary amount of temporary relief which may be obtained by a timely recourse to the operation of thoracentesis in pneumothorax when occurring as a complication of phthisis.—J. S. H.] :—

“Professor Law detailed a case of pneumothorax, occurring in a sailor aged 40 years. The individual’s suffering was very great, from his distressed breathing, caused by the accumulation of air in the affected side; he was, in fact, almost dying when Professor Law had the side punctured to allow the air to escape. The operation was attended with immediate and great relief. The man survived the operation three days, and had no suffering up to the time of his death. Professor Law’s object in detailing the case was, to recommend the operation of tapping the side in certain cases of pneumothorax, and its early performance; where, from the nature of the opening through which the air escapes into the cavity of the side, it speedily accumulates there, and, continually increasing, soon disables the affected lung from taking any share in the respiratory action. He observed that the unaffected lung being suddenly

\* Proceedings of the Pathological Society of Dublin.



called upon to do double duty, in most cases, becomes, from this exaggerated action, the subject of disease, and so death quickly ensues. He, therefore, directed special attention to the condition of the sound lung, and recommended that the operation of puncturing the side should be performed as soon at least as it exhibited any sign of disease. He felt that even the temporary relief obtained justified the operation, although he was satisfied that, with attention to its timely performance, it would be attended with a much larger measure of success.

“*Perforation of the Pulmonary Pleura.*—Dr. McDowel exhibited the morbid parts in this case. The patient, a young man of about 20 years, came under medical observation in October, 1845, labouring under phthisis, which had supervened on secondary syphilis. There was evidence of the existence of softened tubercles in the upper part of the left lung, but the most careful examination failed to detect a cavity. He left the hospital in a few weeks, and early in the month of November was admitted into the hospital of the North Union Workhouse, under the care of Dr. Kirkpatrick.

“The disease in this short interval had made rapid progress, for, when examined now, there were found to exist all the signs of a phthisical cavity beneath the left clavicle. For a month nothing material occurred, but on the 19th of December the patient complained of a stitch in his left side. The pain, it was important to note, *had not come on suddenly*, but from being slight at first, had been for several days gradually becoming more intense; there was also short, dry cough, dyspnoea, and general febrile disturbance. These symptoms were soon followed by the signs of effusion, combined with those of perforation of the lung. On examining the chest, the upper portion of the left side, in whatever position the patient assumed,

sounded preternaturally clear on percussion, and the most depending portion completely dull. No respiratory murmur was audible over any portion of the left side ; but over that part which, when struck, yielded a clear sound, metallic tinkling, and a splashing sound on succussion, were distinctly to be heard. Some of the signs of displacement were also present ; the heart was to be felt pulsating to the right of the sternum, and the left hypochondrium was preternaturally full. In addition, there were present great dyspnœa, profuse diarrhœa, decubitus on the left side, and cough : expectoration, which had been previously very abundant, had ceased. Medical treatment alleviated some of the most distressing symptoms, but on December 27th the dyspnœa became most urgent, and the pain in the side agonizing. On the 29th he was yet worse, unable to lie down, in extreme suffering, wasted by hectic, and so weak, that his discharges were passed involuntary ; under these circumstances, and as a palliative, paracentesis was performed. The centre of the seventh intercostal space, on the left side, was selected ; the integuments were divided with a lancet, and a small-sized trocar was then passed into the pleura. A gush of air first escaped through the canula, then there flowed away nearly two quarts of thin, inodorous, sero-purulent fluid, of a yellowish colour. It was observed that, during inspiration, the air rushed in through the canula into the pleural sac, and that during expiration the fluid flowed through the canula, from which it was obvious that the lung had no power of expansion, but still lay compressed against the spine, although the cause of its compression was removed.

“The relief afforded by this simple operation was extremely gratifying ; the patient bore it well, and one hour afterwards was found lying down and sleeping quietly, which he had not done for several days previously. The system,

however, was too much exhausted to rally; the diarrhœa continued unchecked; he sunk gradually, and died four days after the operation.

“Dr. McDowel presented to the Society a cast illustrating the morbid appearances seen on opening the thorax; and said that he was indebted to his friend, Dr. Kirkpatrick, for the opportunity of exhibiting the specimen which accompanied it. The cast showed great enlargement of the left pleural sac, which after death was found to contain inodorous air, and but very little fluid; the diaphragm pressed down, the heart still lying to the right of the sternum; the lung lay compressed at the back of the thorax; the pleuræ covering it and the parietes were thickly coated with reticular lymph; the cone of the pleura was obliterated by adhesion; and below the line of adhesion, on the front of the lung, three inches below its apex, was seen a round fistulous opening, large enough to admit the top of the little finger, leading directly into a tubercular cavity. The whole of the left lung was full of tubercular deposits; a few scattered tubercles were found in the right lung.”

## LECTURE V.

## EMPHYSEMA OF THE LUNGS.

To Laennec we are, I may safely say, indebted for nearly all the information we possess on the subject of emphysema of the lungs. There are two distinct forms of this affection. In the first, or *vesicular*, or *Laennec's emphysema*, there is simple dilatation of the air-cells of the lung; in the second, or *interlobular*, or *extravesicular emphysema*, we have air effused into the pulmonary, cellular, or areolar membrane. The first is the result of a chronic affection of the lungs with gradual dilatation of the air-cells, being, as Laennec described it, "in some sort merely an exaggeration of the natural condition of the viscus." The second, on the other hand, generally arises from some unusually violent exertion of the lung or injury to the viscus from without.

With regard to the causes of vesicular emphysema, Laennec believed the disease to arise either from a more difficult communication between the air contained in the cells and that in the bronchia, or else a diminished elasticity of the air-cells themselves. Laennec was of opinion that both of the foregoing causes, perhaps, conspire to produce the effect in question, as he says, "the first clearly exists in a number of cases, since we know that the dry catarrh and the obstruction of the lesser bronchia (an attendant on the

dry catarrh) are the most common causes of emphysema. The second cause indicated is equally probable, inasmuch as the thickening of a membrane is a very frequent result of its habitual distension; and in the present case, it appears that the state of emphysema is productive of a certain degree of hypertrophy." I can well conceive that vesicular emphysema can be produced by over-distension of the air vesicles in the same manner that atony of the urinary bladder is produced by over-distension of that organ from retention of urine for any length of time; thus we may have over-distension of the air vesicles from their impaction by a thick viscid secretion, preventing the egress of air, and the air may possibly become so rarefied and expanded by the natural heat of the body as to lead to further over-distension of the air vesicles. Hence, evidences of vesicular emphysema are so constantly met with in those who have been long the subjects of chronic bronchitis.

I think in some cases vesicular emphysema may be looked on as a constitutional disease, and even in a few cases as hereditary, just as some people on making a slight exertion are afflicted with hernia, and hernia has been known to run in families, so I think has emphysema, under the old antiquated name of asthma.

The following are the anatomical characters of the vesicular emphysema of the lungs, as described by Laennec\* :—

In pulmonary emphysema, the size of the vesicles is much

\* A treatise "On Diseases of the Chest and Mediate Auscultation," by R. T. H. Laennec, M.D. Translated from the French by John Forbes, M.D. London : 1827.

increased, and is less uniform. The greater number equal or exceed the size of a millet-seed, while some attain the magnitude of hemp-seed, cherry-stones, and even French beans (haricots). The latter are probably produced by the re-union of several of the air-cells through rupture of the intermediate partitions; sometimes, however, they appear to arise from the simple enlargement of a single vesicle. The largest of these dilated cells are often in no respect prominent on the surface of the lung, sometimes they form a slight projection. In the latter case the structure of the lung acquires a striking resemblance to the vesicular lungs of the Linnean order of Reptilia. Sometimes, though more rarely, we observe on the surface of the lung single vesicles, distended to the size of a cherry-stone, or larger, quite prominent, exactly globular, and apparently pediculated. I say *apparently* pediculated, because in cutting into them we find that there is no real pedicle, but merely a constriction at the point where the cell begins to rise beyond the surface of the lung. The cavity of these dilated cells descends some little way into the substance of the viscus, and there its walls do not collapse when cut, as in the projecting portion. At the bottom of this inferior portion of the cavity we find small openings by which the dilated cell communicates with the adjoining ones and with the bronchia. That those projecting vesicles are produced by the dilatation of the air-cells, and are not owing to the extravasation of air under the pleura, is proved, as well by the prolongation, just mentioned, of their cavity into the pulmonary substance, as by the circumstance, that we cannot force air by pressure of

the finger to leave its place and pass under the contiguous pleura, as would be the case if it were extravasated."

"As long as the parts continue in the above-described state, the disease consists merely in an excessive, permanent, and unnatural distension of the air-cells, the air being still contained in its proper cavities; but when the distension becomes still more considerable, or takes place with greater rapidity, the air-cells are ruptured in certain points, and the surrounding cellular membrane of the lung becomes distended by extravasated air, exactly in the same manner as in emphysema of the subcutaneous adipose membrane. In this case we find on the surface of the lung vesicles of an irregular form, which can be made to change their place by pressure with the finger. They vary in size from that of a hemp-seed to that of a walnut or even an egg. Like the simply dilated cells, these vesicles contain nothing but air, which makes its escape on their being punctured with a pin. Sometimes the air, though truly *extravasated* under the pleura, cannot be displaced by pressure in the manner just mentioned. This happens when the extravasation is situated at the point of reunion of the partitions which divide the different groups of air-cells, as above-mentioned. In this case the projection has usually a triangular shape, and is not very considerable." What the immediate effects on the lining membrane of the air-cells in these cases are, I do not pretend to know; perhaps in the human subject the cells are too minute to bear examination, but I can conceive that dissection of a horse that laboured under this disease might throw a great deal of light on the subject. I have an old family



horse dying of this affection, commonly called in them "*broken wind*," and I purpose having a minute examination made of his lungs.

Vesicular emphysema is tolerably easy of diagnosis when fully developed, as you now have an opportunity of seeing in the case of the woman in No. 6 ward. You have on percussion a morbid clearness, no vesicular respiration can be heard with the stethoscope, little or no expansion of the chest during respiration, the breathing appearing to be carried on by the diaphragm, abdominal, and thyroid muscles chiefly. I have said that there is a morbid clearness on percussion in vesicular emphysema; but it is right to inform you here that it falls far short of the tympanitic sound which you know is present in pneumothorax. Sometimes the morbid clearness is detectible over nearly the entire of the thorax, at other times it is more localized, mapping out in fact the extent of the affected portions of the lung.

[Dr. Stokes has very aptly characterized the morbid clearness on percussing the chest in vesicular emphysema, in contradistinction to the tympanitic clearness of pneumothorax, as "the maximum of the true pulmonary sound."—J.S.H.]

As the blood is not properly arterialized in vesicular emphysema, you have a dull leaden-coloured face, purplish lips, a torpor, or a constant sleepy state, together with œdema of the extremities to a greater or lesser extent. When the disease is fully developed there is orthopnoea; finally, these patients are often taken off by asphyxia. Together with the foregoing signs, you will have the fol-



lowing symptoms in vesicular emphysema—viz., cough dyspnœa, the latter being of that character usually designated “asthmatic.” The difficulty of breathing, although always more or less present, is subject to fits of aggravation, during which the patient’s distress is very apparent to the looker-on. In these cases the expirations are much longer in duration than the inspirations.

[The severe asthmatic attacks met with in extensive emphysema dependent on chronic bronchitis, are, according to Dr. J. Hughes Bennett, “referable to irritation of the incident filaments of the pneumogastric nerve, and to reflex action by means of the excident ones, whereby the bronchial tubes are contracted, the glottis closed, and the muscles of inspiration rendered incapable of dilating the chest.”—*Principles and Practice of Medicine*, 3rd Edition—J. S. H.]

With regard to the character of the expectoration in emphysema, sometimes it is thin, scanty, and frothy; at other times it is of a viscid character, which latter is followed by much relief.

In advanced cases of vesicular emphysema, the liver is pushed down, the jugular veins are thrown out into ropy outlines, and the patient finds it impossible, without the greatest exertion and occasional resting, to mount an ascent, or even get up a flight of stairs.

[Mr. Corfe lays much stress on the appearance of a tumour in the triangular space between the clavicle, sternocleido-mastoid, and omohyoid muscles, at each spell of hard coughing, as a diagnostic sign of emphysema of the

upper lobes of the lungs, resulting from a sort of "hernia of the lung," in consequence of a want of support to the pleura in this region.—J. S. II.]

In a large majority of cases of advanced vesicular emphysema where both lungs are engaged in the disease, the heart, as you might expect, is found enlarged, owing to the additional duty imposed on it from obstruction to the pulmonic circulation.

[As a natural consequence of vesicular emphysema, there is a displacement of the yielding parts of the thorax and its contents by the increase in volume of the lungs; thus, if one lung only be the subject of emphysema, the mediastinum may be pushed over to the opposite side. In a similar manner the intercostals and diaphragm may yield to the increased volume of the lungs; but as Dr. Stokes\* remarks in vesicular emphysema, the muscular expansions of the thorax, which may be considered to be the mediastinum, the intercostals and the diaphragm exhibit a great power of resistance, and in many cases do not yield even after the chest has been much enlarged, and in this respect a remarkable difference is observed between this disease and empyema, in which the yielding of the muscular expansion forms one of the most important diagnostic signs. The intercostal spaces in Laennec's vesicular emphysema do not, as Dr. Stokes observes, become obliterated even in cases where great dilatation of the chest has taken place, but become deeply marked, the muscular fibres acting power-

\* Dublin Journal of Medical Science, vol. ix., p. 35. 1836.

fully, so as to elevate the ribs, and assist in imperfect inspiration. Dr. Stokes affirms that he never saw an exception to this, and that the rule applies to every intercostal space; thus rendering it as a point of difference of the greatest interest between the two diseases of accumulation—namely, empyema and Laennec's emphysema.—J. S. II.]

The morbid specimens on the table are of much interest, as showing both forms of emphysema most beautifully marked, as likewise a hard tubercular deposit minutely studded through the lungs, which deposit may have been the immediate cause of the rupture of the air-cells, and consequently of interlobular emphysema. The pleuræ also in this case exhibit marks of recent inflammation, being coated over with layers of recently-poured out lymph, and it appears to me possible that the fresh attack of pleuritis was sufficient to have caused death, for a man may live for months, years, even to old age, with emphysema of his lungs, but may be carried off suddenly by any inflammatory attack. The patient from whom these specimens were taken was, as you are aware, only a few days in hospital, and was nearly pulseless during that time, requiring the exhibition of stimulants, the application of hot jars to his feet, mustard cataplasms to his legs, &c. The symptoms on percussion were, as you may recollect, an universal unnatural clearness on both sides of the chest. With the stethoscope could be heard a well-marked crepitus, and very loud bronchial respiration, vesicular respiration being completely absent.

## TREATMENT OF VESICULAR EMPHYSEMA OF THE LUNGS.

To our distinguished fellow-citizen, Dr. Jonathan Osborne, the profession at large are much indebted for his having forcibly drawn their attention to the curability of emphysema of the lungs—a question formerly doubted, and on which even at the present day some are sceptical. Dr. Osborne, in his late very admirable treatise\* “On the Nature and Treatment of Dropsical Effusions” (which I strongly recommend to you all for perusal), whilst alluding to the measures to be adopted in dropsy, when combined with bronchitis, says:—“Under the use of these and other similar applications, I have frequently had the satisfaction of believing not only that the bronchitis was at an end, but that portions of emphysematous lung were restored to a healthy state. If asked for the evidence of this latter fact, I answer that the region of the thorax, which had an unnaturally clear sound on percussion, and yet no audible respiration, or which presented the dry crepitus and clear sound of emphysema were, when subjected to this treatment, found gradually to resume the respiratory murmur of health; while the peculiar dyspnoea, characterized by longer expirations than inspirations, was at the same time removed or notably diminished.”

I have lately, I think, hit on a plan of treatment in

\* On the Nature and Treatment of Dropsical Diseases. By Jonathan Osborne, M.D. London: 1837. P. 53.

vesicular emphysema, uncomplicated and taken early into hands, which certainly in the few cases I have treated by this mode, I have succeeded in wonderfully, and it suggested itself to me in the following way :—A short-necked full man, labouring for years under asthma of a spasmodic nature and complicated with emphysema, went to London to put himself under the care of Dr. Rees. At this time the Doctor, like many other leading physicians, was perfectly unaware of the nature of this affection (emphysema), and he conceived that the patient's symptoms arose from a disordered state of the stomach, and consequently attacked that organ. He absolutely weighed his food, which consisted of a dry nature, allowed him very little drinks, and put him on large doses of the carbonate of iron. He continued this plan for one year and a half, when the gentleman reduced gradually in weight three stone, and returned home wonderfully well. This occurred fourteen years ago, and the gentleman only died last year, full of years and honours, and of another disease totally unconnected with the chest. I have tried the foregoing plan successfully in a few cases. By the gradual diminution of the nutriment in these cases, and the consequent gradual diminution of the blood, we give the lungs a fair chance of being restored to their healthy state.

It is right here to remark, that Laennec strongly advocated frictions with oil in emphysema, which he considered "very useful in lessening the susceptibility to be affected by catarrh." Laennec also conceived that in the case of pallid cachectic subjects, the subcarbonate of iron occasionally seemed to have a similar effect, "*and to tend at the*

*same time to diminish the congestion of the mucous membrane, and also the spasmodic stricture of the bronchia."* Laennec was further of opinion that in the severer asthmatic paroxysms, it is frequently necessary to have recourse to venesection in order to relieve the congestion of the lungs, and, moreover, that it is always proper to diminish the necessity of respiration by means of narcotics.

The most frightful and fatal case of emphysema I ever saw occurred to a fine young boy whom I was treating for hooping-cough. I saw him in the daytime when he was comparatively well; pulse not quick; paroxysms neither very frequent nor very violent; his face became suddenly swollen; lips purple; breathing very difficult; pulse very small and rapid; extremities cold; and he died in two hours after my being called in during the night to see him. This is, fortunately, the only case of the kind I ever met with.

[Whilst addressing himself to the treatment of Laennec's vesicular emphysema, Dr. Stokes says:\* "The question as to the curability of Laennec's emphysema has been scarcely agitated in medical circles; and Dr. Osborne deserves great credit for bringing this subject forward in his lately-published *brochure* "On the Pathology and Treatment of Dropsy," in which he states his conviction, that this disease is at all events susceptible of great amelioration, on the ground that in certain cases he observed the feebleness of respiration and morbid clearness of sound to subside, or become greatly diminished, after treatment calculated to

\* Dublin Journal of Medical Science, vol. ix., p. 47. 1836.

remove the obstruction and diminish the frequency and violence of the cough. On this subject I can only bring forward the observations of a few cases, but which, as far as they go, are of great importance in elucidating the question. In the patient to whose case I have already alluded, as illustrative of the diagnosis from mediastinal displacement, I found after certain treatment calculated to relieve bronchial irritation and diminish cough, that, coincident with great relief of symptoms, the following changes in the physical signs took place ; first, that the morbid clearness of the affected side, though not removed, was diminished, and that it terminated at the mesial line, in place of extending, as before, beyond the opposite side of the sternum ; 2ndly, that the râles became more hurried and larger, and the vesicular respiration was manifestly increased ; and, 3rdly, that the stethoscopic phenomena, like those of percussion, ceased to be heard beyond the mesial line of the sternum, where they had been before audible, and that in this situation they were replaced by the healthy murmur of the opposite lung. These alterations in the signs so characteristic of diminution in the obstruction and volume of the affected lung were accompanied by the most marked improvement in the symptoms ; the cough, dyspnoea, and acceleration of breathing being wonderfully diminished, and the condition of the patient in every respect improved." The treatment pursued in the cases here alluded to by Dr. Stokes, was the employment of local bleeding and counter-irritation, with the exhibition of tartar emetic for several days, followed by sedative and demulcent remedies.



Subjoined is the treatment above referred to by Dr. Osborne: "In dry bronchitis the following mixture usually caused free expectoration:—℞ Gum. ammon. gum arab. sacch. alb. singul. ℥ij., bals. copaib. ℥ss., aq. cinnam. ℥iv.; a teaspoonful to be taken every hour and a half. In some instances in which the copaiba produced nausea, it was superseded by the tincture of cubebs; a medicine which, although totally differing from it in botanical and chemical relations, yet agrees with it in medical as well as sensible qualities. When expectoration continued to be copious for a long time without any benefit resulting therefrom, and the principal distress arose from its quantity impeding respiration, then, in conjunction with the diaphoretic course, the administration of acetate of lead, one grain, and watery extract of opium, quarter of a grain, four times daily, caused a diminution of expectoration, and at the same time diminution of irritation in the air-passages. The application of leeches externally to the larynx, the number varying from two to eight, is a most important part of the treatment of bronchitis. The good effects of it are not confined to the larynx, but are apparent also in the unloading of the mucous membrane of the bronchial tubes throughout their entire extent, causing a more immediate cessation of the cough and relief of dyspnoea than any remedial measure which I have had an opportunity of employing. In addition, blisters should be applied to the upper part of the sternum and under the axillæ. I have frequently used also frictions to the back and sides of the chest, with the stimulating embrocations already mentioned, applied several times daily."—J. S. H.]



## LECTURE VI.

## LARYNGITIS, ACUTE AND CHRONIC. APHONIA.

LARYNGITIS may be either acute, sub-acute, or chronic. As we have just had two well-marked cases of laryngitis in our wards—one acute, the other chronic—I purpose drawing your attention to them and to other affections of the windpipe in this and the two or three succeeding lectures.

In the first or acute case of laryngitis lately under our observation, the patient, a strong, young country girl, was suddenly attacked, after exposure to cold and wet feet, by shiverings, headache, and sickness of stomach, a slight cough of a convulsive character then set in, followed by a sense of constriction about the windpipe and difficulty of inspiration. The hoarseness gradually increased, and became so progressively worse that on her reception into hospital (three or four days after the first symptoms had manifested themselves) her voice had altogether failed her, complete aphonia having become established. From the very commencement of the attack she had profuse perspirations alternating with intense rigors, more especially when she moved or attempted to sit up in bed. Pressure over the larynx was followed by pain; the sputa were scanty, greenish, thick and tenacious; pulse accelerated, 29 inspirations in the minute. Relays of leeches were ordered to the region

of the larynx, and the patient was placed under the influence of mercury as rapidly as possible. *Immediately* after the establishment of mercurial action, the voice suddenly returned, the cough subsided, and the patient left the hospital on the twelfth day after admission, having been for the four last days whilst under observation taking the quinine mixture. This, then, was a case of tolerably acute laryngitis.

The case of Rogan, who recently died in No. 2 ward was, on the contrary, one of a very chronic nature, the patient having laboured under the affection of the larynx for some months. From the look of the man, the history of the case, and his constitution, it struck us as very probable that a strumous disease of the lung co-existed with the chronic affection of the larynx, constituting the disease which has not inaptly been called *Phthisis laryngea*; but to form a certain diagnosis in such a case is a very difficult matter. The stethoscopic symptoms being quite obscured by the laryngeal respiration renders this instrument here of comparatively little use; but fortunately percussion may materially assist us, and in Rogan's case the sound on percussion on the left side over the subclavicular region was much duller than on the right, which confirmed me in my opinion as to the state of the lungs themselves. This complication of course rendered the case hopeless. The disease in which the larynx is solely affected by chronic inflammation is in itself a bad case enough.

Now, as to the treatment of a case of phthisis laryngea, what can we do? Small and repeated local bleedings are attended with much good effect, and these patients bear

this mode of treatment much better than one might *a priori* expect. I have seen mercurial fumigation followed by extraordinary good effect in cases of chronic inflammation of the larynx unaccompanied by disease of the lungs ; but I am afraid that in a case like Rogan's that much can never be expected from the mercurial action ; however, we were called on to try it. We ordered the fumigation some days since, but it was, as you may recollect, stopped on account of its appearing seriously to increase the difficulty of breathing. We, therefore, ordered mercurial ointment to be rubbed into the surface of the skin at the arm-pits. We could not give mercury internally on account of the irritable state of the bowels, labouring as he did under diarrhœa.

After the interval of a few days we repeated the attempt at fumigation, as the patient appeared better able to bear it ; but I regret to say with no better results. The effects of mercurial fumigation were impressed upon me some years since in the case of a pregnant lady labouring under chronic laryngitis, who was reduced to the very last stage. It was suggested to me by Mr. Colles to try fumigation, and in a very short time it had such an effect that she perfectly recovered, and is at this moment a comparatively strong woman.

[The method of carrying out mercurial fumigation usually adopted by Sir Henry Marsh in chronic laryngitis was that introduced into practice by the late Dr. Colles, who thus describes it in his justly celebrated work on "Venereal :"—"The process of fumigation may be con-

ducted in an easy and comfortable manner by directing the intended dose of cinnabar, or grey oxide of mercury, to be mixed with melted wax, and with a cotton wick be moulded into a small candle. This may be stuck on a common plate, and then burned under a curved glass funnel, which is to be raised about an inch from the plate. By conducting the process in this way we are certain that all the mercury is consumed, which is but seldom effected in the ordinary mode of throwing it on heated metal; the fumes, too, are thus more gradually brought into contact with the diseased surface, and the patient, if fatigued, may blow out the candle, and suspend the process until he feels himself able to resume it.”\*—J. S. H.]

To check the diarrhœa in Rogan’s case, we made use of the acetate of lead by itself in two-grain doses every second hour, which was attended with perfect success.

To sum up, then, the only chance we have in removing the chronic laryngeal affection in a case like that of Rogan’s, at present under consideration, is by small local bleedings, mercury, the preparation of iodine and iron, counter-irritation, and change of air to a warm climate, maintaining the patient’s strength, and improving his constitution by every possible means within reach.

When in chronic laryngitis the fauces and posterior wall of the pharynx present a dark livid hue and a raised appearance, which they occasionally do, you will find the application of a strong solution of nitrate of silver to them of the greatest possible service.

\* Colles on Venereal. 1837.

In the report before me of the 9th November it was stated that Rogan was much improved that morning, the leeching having been apparently attended with much relief. The patient had been able to bear the fumigation, which he was ordered to continue, and four additional leeches were directed to his larynx. Rogan suffered from very profuse perspirations, especially at night, but he did not at any period during his prolonged illness feel chilly. The purging having returned, he was consequently ordered to take the uncombined acetate of lead as before.

Poor Rogan sank gradually under diarrhœa and perspirations, and died on yesterday. An examination of the thoracic viscera was made this morning, when, as you see, the following appearances presented themselves :—The left lung (as was diagnosed before death) was considerably more diseased than the right. It presented a large cavern in the apex, and the superior lobe, as well as that on the left side, was converted into a cheesy tubercular mass.

The larynx also was the seat of much disease. In the neighbourhood of the chordæ vocales were found, as you observe, two deep ulcerations, and the inferior vocal cord of the left side was perfectly detached by ulceration from the arytenoid cartilage, thus fully accounting for the aphonia that had so long existed. The epiglottis was sound, but the mucous membrane around it was considerably thickened.

## APHONIA.

I may here remark that we meet with several kinds of *aphonia* depending on very different causes, and of course

requiring very different modes of treatment. In some instances, aphonia depends, as we have already seen, on acute inflammation, the result of exposure to cold, but the first form that we shall now notice is that which was present in the case of Rogan—viz., arising from chronic inflammation and ulceration of the mucous membrane of the larynx and trachea. This disease requires most active treatment, for if not cut short it will inevitably implicate the lungs, and therefore it must be attacked in the manner in which we treated Rogan's case from the commencement.

Another species of aphonia, commonly called "The Clergyman's Sore Throat," arises from an over-exertion of the organ of voice in professional men, especially of the church and bar, and particularly in men of irritable constitutions. This requires a very different mode of treatment from the last. Here you should order absolute silence, change of air, tonics, shower-baths, &c. By this mode of treatment I have succeeded in perfectly curing many young clergymen labouring under this affection.

[Dr. Horace Green of New York, whose name has become so associated with affections of the throat and air-passages, from having well studied and written on them, has given the name of "Follicular Inflammation" to the disease here alluded to by Sir Henry Marsh as "The Clergyman's Sore Throat," believing that it consists primarily and essentially "in a diseased condition of the glandular follicles of the mucous membrane of the throat, larynx, and trachea," commencing generally in the mucous follicles of the isthmus of the fauces, and of the upper

portion of the pharyngeal membrane. The disease may be extended until the glandulæ of the epiglottis, larynx, and trachea, and sometimes those of the œsophageal membrane are extensively involved in the diseased action. The following is Dr. Horace Green's description of "Follicular Disease of the Air-passages :"—

*"Description of Follicular Disease of the Air-passages.—*This peculiar malady consists essentially, in its formative stage, of an inflammation of the mucous glandulæ; which is sub-acute in its character; and which may result, as above stated, in hypertrophy, ulceration, or induration of these glandulæ, or in a deposition of tuberculous matter into the substance of the follicles themselves.

"In its simple and uncomplicated form, the affection commences, invariably, in the mucous follicles of the fauces and pharynx; and is extended thence, by continuity, to the glandulæ of the epiglottis, larynx, and trachea; and, in some instances, to those of the œsophageal membrane.

"So insidious, frequently, is the onset of this disease, and so gradual its progress, that, in some instances, it will be found to have continued many months, and to have made considerable advance before the presence of any prominent, local symptom shall have called the attention of the individual to the existence of the affection. He then, perhaps, becomes aware of an uneasy sensation in the upper part of the throat, accompanied by a frequent inclination to swallow, as if some obstacle in the passage might be removed by the act of deglutition; or, more frequently, there is an attempt made, and often repeated,

\* A Treatise on Diseases of the Air-passages. By Horace Green, M.D., LL.D. New York: 1858. 4th Edition.



to clear the throat, by a kind of *screatus*, or hawking, and to relieve it of a sensation of 'something sticking at the top of the windpipe.' About the same time, there is observed an alteration in the quality or *timbre* of the voice; there is experienced in the vocal organs, a loss of power, and a hoarseness is present, which at first is hardly perceived in the morning, or after a full meal; but which is increased towards evening, and after speaking or reading longer or louder than usual. The mucous secretion, which in a healthy condition of the glands is bland and transparent, becomes viscid, opaque, and adherent, and is increased in quantity. Frequently, there is a slight soreness felt about the region of the larynx, but seldom is any cough present at this stage of the disease. In this condition, the symptoms may remain for a long period, sometimes for years, nearly disappearing, at times, and then again, being greatly aggravated, by vicissitudes of temperature, increased exercise of the vocal organs, and by various other morbid causes.

"If we inspect the throat and fauces during the progress of the above symptoms, we shall find the epithelium, which in the healthy state of the mucous tissue covers its surface, more or less destroyed; its absence being manifested by the slightly raw or granulated appearance which the membrane presents; the mucous follicles will be found hypertrophied, and will appear distinctly visible, especially those studding the upper and posterior part of the pharyngeal membrane. If the disease has been long-continued a portion of the follicles may be found indurated, or, in some instances, filled with a yellowish substance, having a resemblance to, and presenting the physical characters of tuberculous matter; whilst *striae* of opaque, adhesive mucus, or of a muco-purulent secretion, may be seen hanging from the veil of the palate, or coating the posterior



wall of the pharynx. As the disease advances, and the follicles, situated at the root of the epiglottis, and in front of the arytenoid cartilage, and the still more numerous glandulæ of the laryngeal mucous membrane, become involved in the morbid action, all the above symptoms appear greatly aggravated; the hoarseness is much increased, and is constant; speaking or reading aloud is attended with great difficulty; and when continued for any period, is followed by pain and increased soreness in the region of the larynx; and by a sensation of extreme languor, not only about the vocal organs, but throughout the whole system. In some cases where the disease affects the glands situated in the ventricles of the larynx, and near the vocal chords, the voice becomes completely extinguished; or if by great effort the patient essays to speak aloud, the vocal resonance is uneven, harsh, and discordant.

“In such cases, notwithstanding the situation and extent of the disease, there is seldom present any decided or troublesome cough; and, in this respect, follicular disease differs essentially from all other equally grave laryngeal affections. Cases have fallen under my observation repeatedly, where the affection had advanced, until the symptoms present indicated extensive disease of the follicles of the larynx, and of the membrane covering the vocal ligaments, until the ulceration of these glands, situated at the root of the epiglottis could be felt upon the laryngeal surface, and yet the patient would remain free, or nearly free from a cough, notwithstanding an abundant acrid secretion, poured out by the diseased follicles, would occasion an incessant hawking to clear the upper part of the windpipe and pharynx of this tenacious mucus.”—J.S.H.]

[No greater modern improvement in the treatment of

disease has, in my mind, taken place than that of the introduction into practice of the topical use of nitrate of silver in affections of the larynx, both acute and chronic.

The merit of having first recommended topical medication by nitrate of silver in chronic laryngitis, although generally attributed to MM. Trousseau and Belloc, is undoubtedly due to Sir Charles Bell, who, so early as the year 1816, published a case in which he had successful recourse to it; but much credit, indeed, is due, and has been freely and generously given, to Dr. Horace Green for his untiring industry and perseverance in proving the value of the remedy, and thereby making it more generally known to the profession at large.

Whilst observing on the topical treatment of chronic laryngitis, Dr. Stokes\* says:—"To the importance of applying direct remedies in these cases, the attention of medical men has been strongly directed by Dr. Graves. We may employ, according to circumstances, either a solution of nitrate of silver, containing from ten to fifteen grains to the ounce, the caustic solution of iodine, as recommended by Lugol, or the inhalation of the vapour of iodine combined with a narcotic."

The best possible manner of applying these caustic solutions is that practised by Dr. Horace Green, who thus describes the form of solution he uses, and the method of employing it:—

"Several years before the publication in this country of the work of Trousseau and Belloc, and before possessing

\* Dublin Quarterly Journal.

any knowledge of the interesting experiments which had been instituted by these gentlemen in the treatment of chronic laryngeal diseases, I had been prosecuting inquiries in relation to the practicability of employing topical, remedial measures, for the treatment of chronic disease of the respiratory apparatus. After having tried many of the remedies, to which allusion has already been made, I became fully satisfied that, for safety, efficacy, and certainty of action, no known local therapeutie agent can compare with the crystals of the nitrate of silver in the treatment of laryngeal and bronchial affections. I speak of the *crystals* of the nitrate; for, in preparing the solution for topical applications to the ærial mucous membrane, the *argenti nitras fusam*, or the solid nitrate, should not be employed, as it is much more likely, than are the crystals, to contain the nitrate of potash, or copper, or lead, in combination.

“When pure, the crystals are transparent, white, or nearly colourless, and are completely soluble in distilled water. A solution of the strength of from two to four drachms of the salt, in an ounce of distilled water, when applied freely to the mucous membrane, does not act, as has been supposed, by burning, or by a destruction of textural matter: it forms, immediately, an union with the albumen and other secretions of the mucous lining, and this compound, thus formed, defends the living tissue from the action of the caustic; whilst it operates to produce a most favourable change in the vital actions of the part.

“*Method of applying the solution.*—In the treatment of laryngeal disease, by the direct application of the nitrate of silver to the diseased surface, I have employed ordinarily a solution of this substance, of the strength of from two to four scruples of the nitrate, to an ounce of distilled water. When, however, there are found extensive ulcera-

tions of the epiglottis, or about the opening of the larynx—ulcerations which it is desirable to arrest at once, I have not hesitated to apply directly to the diseased parts a solution of double the strength of the last named. But one or two applications only of a medicine of this power should be made at one time; ordinarily, however extensive the lesions may be, it will not be necessary to employ a solution of greater strength than one composed of four scruples of the salt to an ounce of water. On the other hand, it has been found, that one of less strength than of from forty to fifty grains of the nitrate to an ounce of fluid, will have little effect upon a diseased mucous surface, where ulcerations exist.

“In cases in which it becomes necessary to cauterize the interior of the laryngeal cavity, the aperture of the glottis should not be passed at once; the part should be *educated*, by applying the solution daily, for several days, to the faneial and pharyngeal region; to the epiglottis, and about the opening of the glottis.

“Proceeding in this manner, that exquisite sensibility which belongs to the lips of the glottis, is, in a good degree, overcome, and the instrument may then be passed into the larynx, without producing half the amount of that irritation which its introduction below the epiglottis would have awakened at first.

“The instrument which I have always employed for making direct, medicinal applications into the cavity of the larynx, is one composed of whalebone, about ten inches in length, curved at one end, to which is securely attached a small, round piece of fine sponge.

“The extent to which the rod is to be bent must be varied according to circumstances; for the opening of the glottis is situated much deeper in some throats than in others; but the curve which I have found suited to the

greatest number of cases is one which will form the arc of one quarter of a circle, whose diameter is four inches.

“The instrument being prepared, and the patient’s mouth opened wide, and his tongue depressed, the sponge is dipped into the solution to be applied, and being carried over the top of the epiglottis, and on the laryngeal face of this cartilage, is suddenly pressed downwards and forwards, through the aperture of the glottis, into the laryngeal cavity.

“This operation is followed by a momentary spasm of the glottis, by which the fluid is discharged from the sponge, and is brought into immediate contact with the diseased surface.

“Every physician who has been present when this operation has been performed (and a large number have witnessed it from time to time) has manifested much surprise on observing how little irritation has been produced by the introduction of the sponge.

“If the patient, on opening his mouth, take a full inspiration, and then be directed to breathe gently out at the moment in which the sponge is introduced, the irritation caused by the application will be much less than when this caution is not observed. The fact, indeed, has been fully established, by repeated experiments, that the introduction into the larynx of a sponge saturated with a solution of the crystals of nitrate of silver, of the strength of forty, fifty, or even sixty grains of the salt, to the ounce of water, does not produce, ordinarily, as much disturbance as is caused by the accidental imbibition into this cavity of a few drops of tea, or even of pure water !

“In the topical treatment of the follicular disease, it will be found that all larynges cannot be entered with the same facility. Indeed, in some instances, where œdema of the epiglottis and of the arytenoid cartilages has existed, I

have found it very difficult, in making the first attempt, to pass the sponge of the probang through the aperture of the glottis."—J. S. II.]

A third and curious kind of aphonia is that occurring in hysterical females. It comes on suddenly and as suddenly disappears, and requires the same treatment as the other forms of hysteria demand.

## LECTURE VII.

## DISEASES OF THE LARYNX, CONTINUED.

*Œdematous Laryngitis, or Œdema of the Glottis*, which has likewise received the names of “Œdematous Angina,” “Cynanche Laryngea,” “Submucous Laryngitis,” “Cynanche Occulta,” is a frightfully dangerous and often rapidly fatal disease, the true nature of which has, as Dr. Cheyne observes, been only recognized comparatively lately. Little indeed was known with certainty about the affection at the commencement of the present century, for although cases somewhat similar in symptoms had been alluded to in language more or less brief and obscure by very early writers, amongst whom may be included Hippocrates, Galen, Paulus Æginetus, Lommius, Morgagni, and others; yet to Dr. Farre\* of London is undoubtedly due the credit of opening an avenue to a correct diagnosis of this dangerous complaint, by means of a paper read before the Medico-Chirurgical Society of London in 1812. Dr. Farre’s communication was immediately followed by a brief reference by Sir Henry Hallford, then President of the Medico-Chirurgical Society, to the cases of two very eminent physicians—viz., Sir John Macnamara Hayes and Dr. David Pitcairn, both of whom were carried off by œdematous laryngitis a short time previously; the latter

\* See Medico-Chirurgical Transactions, Vol. iii., pp. 85, 323.

gentleman, mistaking the true character of the disease he was dying of, wrote on a piece of paper that his complaint was *croup*. The reader will find subsequent communications on the subject of œdematous laryngitis in the volumes of the Medico-Chirurgical Transactions from the able pens of Sir Gilbert Blane, Dr. Percival of Dublin, Dr. Bailie, Mr. Lawrence, and others.

The following are the symptoms of the œdematous laryngitis:—The patient is first usually seized with rigors, alternating with flushings of heat, headache, and a strong bounding pulse. These symptoms are rapidly succeeded by hoarseness, an incessant stridulous cough, difficulty of breathing, a sense of impending suffocation, and as if there were a foreign body in the windpipe; the countenance becomes expressive of great anxiety, and the lips acquire a purplish hue. If you now examine the fauces, you will sometimes, but not always, find the mucous membrane there congested, and the epiglottis much swollen, standing erect. At this stage the patient generally complains of pain in the larynx, increased by pressure, and his voice becomes so altered in character as to become almost inaudible. If the disease is to progress from bad to worse, the patient becomes very restless, he is constantly starting up in bed with a frightened appearance, throwing his arms about as if imploring relief from the bystanders; in fact, I know no case of suffering from disease which is more affecting to the looker-on, or which naturally elicits more sympathy from the attending physician than that dependent on œdema of the glottis.

In œdematous laryngitis the patient is thirsty. Some-



times, however, but not always, when he attempts to drink, he finds his power of swallowing impaired, owing to the epiglottis ceasing from its swollen and permanently erect condition to act as a lid or cover to the glottis, allowing portions of fluid to trickle down the windpipe; whereby not only his distress, but likewise his danger, is much added to. This difficulty of swallowing is, however, far from being invariably present, although Sir Gilbert Blane, no mean authority, would lead you to think otherwise, for he says that it is *a combination of difficult deglutition with difficult respiration*, which constitutes the essence of œdematous laryngitis, which he has treated of under the name of "Cynanche Laryngea."

If a case of œdematous laryngitis is to proceed to a fatal termination, the foregoing train of symptoms become intensified; thus the breathing becomes more difficult, all the extraordinary muscles of inspiration being called into action; the cough becomes more painful and troublesome; the circulation more impeded, as shown by the face and lips becoming more swollen and congested; the eyes protruding from their sockets. The patient now assumes either the sitting or standing posture, and is constantly calling for more air, and if he is not suddenly carried off by spasm of the glottis, which he frequently is, his pulse becomes small, frequent, and irregular, the surface cold and clammy, he gradually becomes somnolent or drowsy, and dies comatose.

[The accompanying beautifully executed woodcut, by Mr. Oldham of Rathgar, faithfully represents the morbid appearances presented by the larynx of a patient who was

suddenly carried off by œdematous laryngitis. For the specimen from which the drawing was taken, and the history of the case, I am indebted to my friend Dr. Hans Irvine, in whose practice it occurred.—J.S.H.] :—

“ Mr. T., aged about 30 years, rather addicted to habits of intemperance, called on me in June, 1857, in consequence of having caught cold and lost his voice to a great extent, accompanied with some unpleasant feeling about his throat, but no pain; breathing much quickened; inspiration attended with some difficulty; expiration easy. The sound of his voice and breathing struck me at once as peculiar, a certain gurgling sound accompanying each act of respiration; there was but little cough, and very small amount of expectoration; the pulse was natural, and no fever whatever appeared to exist. The alteration of voice at once struck me, together with the peculiar sound on each act of respiration. Using in this instance the argument of exclusion, I was enabled to determine the nature of his complaint. I need not enter into the differential diagnosis, as I am confident this will be done in the lectures you are publishing on the subject, nor should I trouble you with the means adopted in the treatment of the case; but as they were successful to a certain extent, it may be worth while to mention that, as there was no visible inflammation present, I considered that every means that could be taken to relieve the œdema (which was manifestly the cause of the peculiarity of voice) should be at once adopted. Acting on this view, I first gave an emetic, and after its operation exhibited hydragogue purgatives, together with a large

blister on outside of throat, Much relief was afforded in the course of twenty-four hours. A stimulating gargle, so as to produce ptyalism as much as possible, was diligently used from the beginning. He expressed himself so much relieved that it was with some difficulty I was enabled to make him keep within doors, as he was very anxious to go to his business. On the third and fourth days there was no return of difficulty of breathing of any sort, and so anxious was he to go out, that I gave him in the charge of the lady of the house, and desired her on no account to leave him, as cold easterly winds were prevailing at the time. He, however, succeeded in getting out after I had seen him, about eight o'clock in the evening, and returned about one o'clock in the morning so intoxicated that they found it no easy matter to get him to his room.

“In the morning, about seven o'clock, the servant in going to see how he was, became much alarmed on getting no reply to her inquiries. Being immediately sent for, I was at once in attendance, and found him *in articulo mortis*. I need not say that death took place immediately afterwards; but the specimen I send you, which I had much difficulty in obtaining, proves that my diagnosis of the case was perfectly correct.”

Œdema of the glottis occasionally becomes engrafted on chronic laryngitis. Sometimes the inflammation would appear to spread from the tonsils; but indeed, as Sir Gilbert Blane has justly remarked, “if the glottis were by nature as liable to inflammation as the tonsils, the human species would have a difficulty in maintaining its existence.”

You see, then, the vital necessity of watching, from hour to hour, a patient who may be suffering from sudden hoarseness, stridulous, laborious breathing, and pain in the larynx, increased by pressure, and accompanied by fever, knowing as you now, I trust, do, that such are the ineipient symptoms of the œdematous laryngitis, or the “œdema occulta” of the ancients, which you are aware may run to a fatal termination, if not properly treated, in an incredibly short space of time.

#### CAUSES OF ŒDEMATOUS LARYNGITIS.

Although œdema of the glottis is more usually the result of exposure to cold, still it occasionally is met with as a consequence of small-pox [of which the following rapidly fatal case by Professor Law\* is an instructive example—J. S. H.] :—

“*Œdema of the Glottis.*—Dr. Law communicated the following particulars of a case of fatal œdema of the glottis, occurring in connexion with small-pox. The subject of the case was a man, aged 32 years, of robust habit, who had been, it was alleged, vaccinated. He was admitted into Sir Patrick Dun’s Hospital, labouring under an attack of small-pox, of three days’ standing. The eruption, at the time of admission, was very thick upon the face and upper and lower extremities, but much less so upon the trunk. The patient was what would be termed ‘heavily siek,’ being greatly oppressed with the disease, and ex-

\* See Transactions of the Pathological Society of Dublin, “Respiratory Organs.”

pericencing no relief, as patients attacked with secondary small-pox usually do, on the appearance of the eruption. The case went on thus for some days, the eruption becoming more and more apparent every day, but exhibiting an unhealthy look. The pustules were not prominent, as in a favourable case, but flattened; and the interspaces were occupied with an erysipelatous inflammation, of a deep violet complexion. The fever did not run very high, nor was there any delirium, and after a time the eruption became confluent in several places, particularly about the knee and elbow joints. Matters went on in this way up to the twelfth day, the patient neither making any complaint nor presenting any alarming symptoms, except the unhealthy appearance of the eruption. On the morning of the thirteenth day, however, Dr. Law was greatly surprised to learn that the man had died shortly before his arrival at the hospital. The apothecary informed him that, at about nine o'clock on the previous night, he began to complain of a difficulty of breathing, and some degree of soreness about the throat; to relieve which, he applied a sinapism externally, and a strong solution of nitrate of silver internally. After this the patient remained quiet during the night; but on the following morning, at seven o'clock, the distress of breathing returned, though not to such a degree as to induce the apothecary to think there was much danger to be apprehended. Two hours afterwards, however, he was suddenly seized with a convulsion, and died, having swallowed drinks about ten minutes previously.

“*Autopsy.*—On cutting through the integuments, they were found to be infiltrated with a gelatinous fluid, which did not escape when the incision was made. This infiltration had taken place not only into the subcutaneous areolar tissue, but likewise into the areolar tissue throughout the muscular structure.

“On examination of the larynx, it exhibited the epiglottis very much thickened, as also the aryteno-epiglottidean folds of membrane, from infiltration of a gelatinous fluid into the submucons tissue. The sides of the rima glottidis were so approximated, that the passage was almost completely obstructed: there were no pustules, either on the tongue or in the larynx or trachea. Dr. Law had not been able to find among the records of œdema of the glottis any case occurring under the same circumstances as the present; nor in the history of small-pox had he either seen or read of a case of the disease terminating fatally from an exactly similar affection of the throat. Every one knew how common it was for the throat to be engaged, and seriously too, in small-pox, from pustules forming on the mucous membrane of the mouth, and extending down the larynx and trachea. In fact, the similarity of pathological susceptibility proved the identity of the skin and mucous membrane. But in the case to which Dr. Law directed attention it was not the mucous membrane that was the seat of disease, but the submucous reticular tissue, into which was infiltrated a fluid exactly similar to that which was found in the subcutaneous and intermuscular areolar tissue.

“From the frequency with which Dr. Law had observed this gelatinous fluid effused into parts affected with diffuse inflammation, he was disposed to regard the variolous inflammation extending to the subcutaneous areolar tissue to be of the same nature in the present instance. He further remarked, that he considered the confluence of the eruption to be essentially diffuse inflammation, as contradistinguished from the discrete form in which the pustules were bounded by adhesive inflammation.

“Dr. Law also looked upon the peculiar character of the laryngeal affection as confirmatory of his view, that the inflammation in the present case was of the nature of dif-

fuse inflammation, as he conceived that the larynx was peculiarly susceptible of both this and other forms of disease in all that class of formidable affections designated, from their disturbance of the nervous system, constitutional irritation—namely, glanders, malignant pustules, &c. Of this pathological fact he had met with many instances; not alone when the diffuse inflammation occupied parts in the immediate vicinity of the larynx, but when more distant parts were the seat of it.

“Dr. Law conceived that to establish a relation between confluent small-pox and diffuse inflammation, and other similar diseases, would explain the low asthenic type of the symptoms that marked this form of the disease,—this low type of symptoms being common to them all.”

At other times œdema of the glottis is the result of erysipelas [as the subjoined case, recorded by Professor R. W. Smith,\* well exemplifies.—J. S. H.]

“*Œdema of the Glottis; Erysipelas propagated to the Mucous Membrane of the Larynx; Scrofulous Abscesses in the Neck.*—Mr. R. W. Smith presented a specimen taken from the body of a man æt. 36, who laboured under strumous enlargement of the cervical lymphatic glands; several of the tumours suppurated, and the matter made its exit near the ear: slight febrile symptoms followed, and in a few days erysipelas appeared on the neck and lower part of the face: after a few days more the erysipelas began to fade from the skin, but at the same time spread over the lips and attacked the mucous membrane of the mouth: difficulty of breathing and dysphagia rapidly succeeded;

\* See Transactions of the Pathological Society of Dublin, “Respiratory System,” April 1844.



the patient became semi-comatose, and died. Upon examination of the body it was found that the erysipelas had spread to the orifice of the larynx, producing œdema of the glottis: the submucous tissue of the arytenoid region being infiltrated with serum. Mr. Smith also detailed the case of a man æt. 48, who was admitted with erysipelas of the head and face; upon the seventh day after the receipt of a lacerated wound of the scalp the erysipelas spread to the mucous membrane, and the man died suddenly upon the twelfth day. Post-mortem examination discovered effusion of serum in the submucous tissue covering the left arytenoid cartilage; the mucous membrane was elevated in the form of a tense, shining vesicle, which overhung and closed the orifice of the larynx."

[The practical surgeon must never lose sight of the fact, that *œdema of the glottis may not only be produced by sub-fascial cervical inflammation, but that it may come on after the inflammation has terminated in an abscess with a free discharge—a period when it might naturally be supposed that the danger of such a complication no longer existed*; in proof of which it will be only necessary to adduce the following case which was laid before the meeting of the Pathological Society of Dublin, held January, 1847, by Dr. McDowell, who "presented a specimen of *œdema of the glottis*, taken from the body of a man aged 48, who was admitted into the Hardwicke Hospital labouring under pneumonia of the upper lobe of the left lung, extending from above downwards, and accompanied by considerable fever. The pneumonia yielded to appropriate treatment; then there appeared some fulness, attended with pain, below the angle of the jaw, on the left side of the neck. In this situation



an abscess formed, which Dr. McDowell regarded as one of these critical abscesses so frequent in the fever then prevalent in Dublin. There were no very urgent symptoms, but after three or four days a blush of redness appeared over the tumour, which had considerably increased in size; there was now also difficulty of deglutition. The abscess was freely opened on the 18th of January, by an incision made through the cervical fascia; healthy pus was given exit to, and much relief was experienced. At six o'clock in the evening of the same day intense dyspnœa occurred; there was also great difficulty of swallowing, The clinical clerk being called for, found the patient sitting up in bed, breathing convulsively, his face livid, a clammy sweat everywhere bedewing the surface, the extremities cold, and the vital powers rapidly sinking. Dr. McDowell was immediately sent for, but before the messenger reached him the patient had expired, after one or two violent convulsions. On examining the body after death, the abscess in the neck was carefully explored. It was situated below the parotid gland, and a little behind the angle of the jaw on the left side. It extended deeply inwards towards the larynx, and the tissues between it and the exterior of the larynx were condensed. On cutting into the larynx the submucous tissue of the arytenoid region was found so infiltrated that the opening of the glottis was completely obstructed; the remainder of the larynx was healthy. The upper part of the left lung was still solidified."

It is unnecessary here to allude to that form of œdematous laryngitis, the consequence of a scald of the glottis from the inhalation of the steam of boiling water—a subject

which has lately been so admirably handled by Drs. Jameson and Bevan.\*—J. S. H.]

#### TREATMENT OF ŒDEMATOUS LARYNGITIS.

Œdematous Laryngitis demands the most active treatment—viz., depletion, general and local (the latter carried out by leechings to the mucous membrane, and the nearer to the epiglottis the better, as suggested by Dr. Cheyne), rapid mereurialization by means of calomel internally, combined with antimonials, and externally by mereurial inunction; but inasmuch as the affection often proves rapidly fatal before medical treatment can exercise its beneficial influence, it is frequently advisable to have early recourse to bronchotomy as the best hope of saving the patient's life.

[The almost magic influence exercised at times by the early application of a saturated solution of nitrate of silver to the glottis in acute laryngitis, when combined with œdema of the epiglottis, was never better marked than in the case of a medical practitioner in the immediate neighbourhood of Dublin. About ten years since this gentleman having been exposed to cold in severe weather whilst visiting his numerous patients, was suddenly seized with the distressing and dangerous symptoms of acute laryngitis. I saw him in conjunction with Sir Henry Marsh as soon as possible after the setting in of the affection. We covered the region of the larynx with leeches, followed by large linseed-meal poultices, and placed our patient on calomel and James's powder (Newbery's) without any marked

\* See Dublin Journal of Medical Science, Nos. ix. & lvii. N.S.

relief. At our second visit our patient was obviously worse, his face was flushed, his pulse rapid, respiration not difficult, cough incessant, and accompanied by a sense of constriction of the windpipe and of impending suffocation. On examining the throat we found the epiglottis standing erect and much enlarged. We now determined to try the effects of the topical application of a strong solution of nitrate of silver to the glottis, and to our delight, almost instantaneously after we had brought the solution in contact with the inflamed surface, our patient expressed himself as wonderfully relieved, exclaiming that we had saved his life and "*had removed a bar from his throat.*" This gentleman is, I am happy to say, still alive and in the enjoyment of the very best of health.—J. S. H.]

[The following observations on the treatment of laryngitis œdematosa by Professor Porter,\* more especially with regard to the early performance of bronchotomy in cases of acute laryngeal disease, are well worthy of record, emanating as they do from a living authority second to none in Europe† :—J. S. H.]

"Acute cynanche laryngea is a disease which runs its course very rapidly, and often terminates in the course of

\* Observations on the Surgical Pathology of the Larynx and Trachea, chiefly with a view to illustrate the affections of these organs which may require the operation of Bronchotomy. By William Henry Porter, A.M. London: 1837.

† Since these Lectures were placed in the hands of the printer, the melancholy, sudden, and unexpected death of Professor Porter took place, thus leaving another blank in the profession not easily to be filled up.—J. S. H.

a few hours. If bloodletting be resorted to, it should be adopted to a large extent, and without delay; and if it produces a decided alleviation of symptoms, and is followed by the exhibition of tartarized antimony, so as to keep the patient in a state of depression during several hours, the case will probably terminate favourably. But this will not be likely to happen if a serous effusion has already taken place in the submucous tissue, and then it will be injurious, inasmuch as patients who suffer from obstructed respiration soon become weakened in vital energy, and sink with wonderful rapidity. Persons who have their minds strongly directed to any one particular object are thereby less likely to be affected by medical treatment; and therefore, if a man be under extreme anxiety to maintain respiration, and thinks that bleeding will afford him relief, it is probable he will lose a large quantity before it produces syncope. I have known an instance in which the veins of both arms were opened, where the patient suffered from cynanche laryngea; and although above forty ounces of blood were drawn *pleno rivo*, yet he never became weak or sick under the operation. But it was very near to have proved fatal afterwards, for in the course of an hour he showed symptoms of extreme debility, his pulse faltered, his extremities became cold, and it was only by great care and exertion that his life could be preserved. However, under all circumstances, bleeding is the least hazardous of any mode of treatment, because it can be tried without any delay, and its efficacy is perceptible at once. If, therefore, after a large quantity of blood had been drawn, no alleviation of symptom became observable, it would form strong grounds for suspecting that the cause of the difficult breathing was mechanical, and be an additional reason for resorting to the operation without unnecessary loss of time.

“ In like manner, it may be objected to every remedial

treatment, whether local or constitutional, that if the effusion into the submucous tissue has taken place, every moment suffered to elapse before an artificial opening is established must be pregnant with danger. The lungs very soon become oppressed, and incapable of effecting the arterialization of the blood; and if the brain is supplied with a fluid not suited to the purposes of maintaining its functions, its vessels become congested, and a diseased action is commenced, which even the subsequent establishment of free respiration will not remove. This is a fact well illustrated by persons who have attempted to commit suicide by hanging, and been discovered before the vital spark has been completely extinguished; for many of these, although respiration has been perfectly restored, have died with symptoms of oppression of the brain, perhaps in a week after the deed has been committed; and, on dissection, nothing has been found except venous congestion in the cerebrum, with a slight effusion on the surface under the arachnoid membrane. It is thus that bronchotomy so frequently proves unsuccessful in the treatment of acute laryngeal affections; for as during the first stage the patient's strength remains unimpaired; as he is able to walk about and use considerable exertions in endeavouring to procure relief; and as he enjoys the perfect use of his sensorial faculties, the degree of danger is seldom appreciated in time, and the operation is postponed for the trial of antiphlogistic remedies, until such disease has been induced in the lungs as will render every subsequent effort unavailing.

“It is very possible that a patient may perish during the first stage of this disease, being strangled by a spasmodic action of the muscles of the larynx, and thus die *constante mente integrisque sensibus*: indeed, the unwillingness a patient feels to make an attempt to swallow, which always

brings on a spasm, or sometimes even to speak, shows that he is sensible of the danger attendant on spasm, quite independent of the fearful distress it occasions. But it is not thus that the disease terminates in general; for, after the difficulty of breathing has continued for some time, the patient's countenance becomes swollen and of a livid paleness,—the eyes are pearly white and suffused, as if an exhalation had taken place from the conjunctiva, and dried upon the membrane—the lips are purple—the disposition to slumber increases, whilst the extreme anxiety of the patient to maintain respiration and his efforts to carry it on are increased. Every muscle that can be brought into action is forcibly employed, whilst the sound of the breathing is altered, and there is a kind of sob of distress accompanying each expiration. The sweat pours over the face and forehead, and perhaps from the entire body. Sometimes the patient becomes inconceivably restless; whilst again he may remain quiet, apparently under the influence of hopeless despondency. The pulse very generally increases in rapidity.

“After these symptoms have endured a few hours, the patient is observed to make less violent efforts to support respiration, and the intervals between each act are longer. The want of accordance between this function and circulation becomes more apparent; for the pulse is very small and increased in frequency, and often immediately before death it is so rapid that its strokes cannot be counted. The breathing seems to be more a convulsive effort than a regular action, and is sometimes accompanied by stertor. The countenance becomes sunken, the eye loses its brilliancy still more, and the forehead is bedewed with a cold and clammy sweat. The patient becomes insensible, and death soon closes the scene.”

## APPENDIX TO LECTURE VII. BY THE EDITOR.

## ON THE SURGICAL TREATMENT OF ŒDEMATOUS LARYNGITIS.

BRONCHOTOMY, or the method adopted by the surgeon for establishing an artificial opening in the respiratory tube in the cervical, and not in the bronchial region, as the derivation of the word would lead one to infer, is divisible into three operations, differing materially both as to anatomical relations and modes of performance—viz., *laryngotomy*, *tracheotomy*, and *laryngo-tracheotomy*, and it is to be regretted that the generic term “bronehotomy” should be so generally and vaguely used, even by some of the best modern authorities, whereby their views are rendered obscure with regard to the special operation they may advocate, when dealing with the various diseases and accidents of the larynx and trachea.

Examining into the relative value of the foregoing methods, Velpeau\* makes the following observations which we consider of such value, that we quote them unabridged :—

“This leads us to examine which ought to have the preference, tracheotomy, laryngotomy, or laryngo-tracheotomy. The ancients had no occasion to discuss this question, as they attempted only the opening of the trachea. The opening in the crico-thyroid membrane has only been employed in practice since the time of Vicq-d’Azyr, who proposed it before the close of the last century. Desault

\* Velpeau’s Operative Surgery, by Valentine Mott, Vol. iii., p. 143. New York : 1856.



is the first person who suggested the division moreover of the thyroid cartilage upon the median line, and it is to Boyer to whom we are indebted for the idea of incising at the same time from above downwards the cricoid cartilage and the first rings of the trachea.

“A. *Laryngotomy*, after the manner of Vicq-d’Azyr, and adopted by a great number of surgeons, possesses the advantage of being the most easy method of acting upon a membrane which is but slightly organized and superficially situated, of not incurring the risk of wounding any vessel, or any important organ, and of leaving the glottis intact ; but, on the other hand, it does not procure an opening sufficiently large to admit of the introduction of instruments required for the extraetion of foreign bodies ; while, on the other hand, the canula, which it would allow us to employ, would be rarely large enough to admit of a sufficient quantity of air. In imitating Desault, on the contrary, as has been done in America and England, and as also is practised by M. Whitley and M. Blandin, we open into the larynx as freely as possible, no vein or artery of any size runs any risk of being divided. It is the only means in some sort of laying bare the foreign bodies, which in most cases become imbedded or arrested between the lips of the glottis or the polypi, or other vegetations, which also are rarely seen except in the vicinity of this part. Nevertheless, though the lesion of the chordæ vocales, which has been so much dreaded by those who have opposed Desault, may be easily avoided, as it is, moreover, a matter of little consequence, and though the voice in patients treated by this method may not have suffered more injury than by any other, it does not, however, merit the preference, except in the cases which have just been pointed out ; moreover, the patient should not have reached that time of life when the thyroid cartilage has become



charged to too great a degree with phosphate of lime. Should the dread of wounding the chordæ vocales deter him, the surgeon would have to do nothing more than to adopt the advice of M. Foulignon, and in order to avoid them, divide the thyroid cartilage upon its side, and then lay open the soft parts of the glottis transversely. When the foreign body is situated below the larynx, or that it becomes advisable to insert a tube into the wound, it is evident that this process can be no longer applicable. Perhaps, rigorously speaking, it might even be possible to replace it always by another operation which has been proposed by M. Vidal (de Cassis) with the view of opening abscesses of the glottis, and also by M. Malgaigne—an operation of the first suggestion of which no doubt was derived from the experience of Bichât upon the voice, and which consists in penetrating into the larynx through the thyroid membrane. Nevertheless, an operation of this kind has something in it repugnant, at least at first view, which admonishes me to dwell no longer upon it, notwithstanding it succeeded very well in trials which I have made with it upon the dead body.

“B. *Laryngo-tracheotomy*, which ordinarily leaves the thyroid gland entire, and which incurs the risk of wounding only the crico-thyroid artery, does not enable us, like the method of Desault, to examine into the bottom of the larynx, being too remote from the bronchi for foreign bodies, possessing but little mobility, to reach with facility the opening which has been made. The division at the same time is in too near proximity to the glottis not to render the employment of a permanent canula dangerous; so that in spite of its inconveniences, tracheotomy still appears to combine the most advantage, under all circumstances, where the method of Desault is not absolutely required.

“*C. Tracheotomy.*—The trachea, which is a sort of cylindrical canal which descends to a line with the second or third dorsal vertebra, and composed of about twenty cartilaginous rings and resting against the œsophagus rather more on the right side than on the left, is covered—1st, by the common integuments; 2nd, by the cervical aponeurosis; and 3rd, by the uniting bridle of the thyroid lobes close to the cricoid cartilage; lower down by the supra-sternal venous plexus, and the middle thyroid artery when that exists; 4th, slightly upon its side by the sterno-hyoid and sterno-thyroid muscles, accompanied posteriorly by the inferior laryngeal nerve, and at a considerable distance from it by the primitive carotids; it is sometimes crossed by one of the thyroid arteries, which in that case goes from one side of the neck to the other. In infants especially the trunk of the innominate almost always conceals its anterior surface, even as high up as above the thorax, so that the right carotid also does not leave it until a point very high up, where it takes a situation completely on one side of it. I have also seen the left carotid originate on the right side and pass in front of the trachea in order to reach its usual destination, and that of the right side do the same. Other vascular anomalies also have been met with in this region, and deserve no less attention than the preceding. From all these relations, it results that the trachea, which is sufficiently superficial above, where the thyroid gland, which protects, moreover, its lateral portions, alone almost separates it from the integuments, becomes deeper and deeper in proportion as it descends or inclines toward the chest, in order to follow the thoracic concavity of the spine, and that on the lower part of the neck we are obliged to seek for it more than an inch deep under the integuments. Finally, from the great mobility it possesses, we might very readily, when seeking to lay it open, if we were

not on our guard, push it so much aside that the instrument might fall into the primitive carotid, as happened in a case mentioned by Desault, and where it is seen that a pupil of medicine who was in a state of asphyxia was killed in this manner by one of his companions who was endeavouring to save his life."

Having been favoured by the late lamented Professor Porter (who naturally took a deep interest in the publication by us of this course of lectures by Sir Henry Marsh on diseases of the larynx) a few days previous to his death, with extracts from an unpublished clinical lecture on bronchotomy delivered by him in the Meath Hospital some time since, we give them, as he intended we should do, to the profession, well knowing that they will be read with deep interest, conveying as they do Professor Porter's matured views on that all-important of subjects—the surgical treatment of œdematous laryngitis:—

"Here, then, are two operations—viz., laryngotomy and tracheotomy—performed in or nearly in the same locality and both having the same primary object in view, that of creating a passage for the uninterrupted transmission of air to the lungs when the natural one has been from any cause impeded: one of these, however, is simple, unattended with difficulty in the performance or danger in the result; it is, in fact, as Louis expressed it, as safe and as easy as a common bleeding, whilst the other involves the infliction of a deeper wound, is always more or less difficult of performance, and leads often to most serious results. It may verify the opinion entertained by Desault of being *une operation toujours facheuse*. It follows, of course, as surgeons are in nowise

disposed to incur unnecessary risk or trouble, that something more is to be occasionally sought for than a mere passage for the air, and that where tracheotomy is the operation selected, some ulterior or secondary object is to be attained. It would, therefore, be most desirable if it could, in the first instance, be determined to what form of disease or species of accident either might be especially applicable, and this, perhaps, is not so difficult a task as might, on a superficial view, be imagined.

“When I first turned my attention to this subject, and for several years afterwards, I freely confess that all my predilections were in favour of tracheotomy. The operation, to be sure, had its dangers, but they could be avoided by care and circumspection. It had its difficulties, but in the hands of the bold young surgeon they sank into nothing in comparison with the advantage—the supposed advantage of having the wound at the greatest possible distance from the disease. It is true that I knew an opening into the crico-thyroid space must answer every purpose of artificial respiration; that I had written, ‘when inflammation of the mucous membrane has accompanied the laryngitis œdematosa, I cannot find any satisfactory examples of its having extended beyond the larynx and into the trachea, and that, even if inflamed, the close connexion of the mucous membrane to the rings of the trachea must prevent any very dangerous tumefaction; still, I could not divest my mind of the idea that the wound of the operation ought to be, as far as practicable, from the seat of the diseased action, whatever it might be, and I invariably acted accordingly.’ It happened, however, one day that two drunken fellows were squabbling in an ale-house in the country, when one was stricken down, and received whilst on the ground a violent kick in the neck from the other. He immediately exclaimed that his wind

pipe was broken. He was immediately taken up and carried home, where he languished and died in three or four days afterwards. Of course there was an inquiry into the cause of his death, and in consequence of some difference of opinion the case was referred to me. On the windpipe being removed from the body and slit up posteriorly, the larynx presented all the appearance of œdematous effusion. A swelling on each side obliterated all appearance of ventricle or chordæ vocales, and effectually closed up the rima, and the poor man must have thus been suffocated. The swelling, however, was not caused by serum, but by blood. The thyroid cartilage had been broken by the kick. The loose cellular tissue had been torn underneath, and an ecchymosis formed within it slowly and gradually, but sufficiently to choke the unfortunate patient. But what particularly attracted my attention was the manifest limitation of the swelling. Where there was loose reticular tissue to permit the play of the muscles of the larynx it was loaded and gorged with blood; below, the mucous membrane adhered firmly and closely to the trachea, and there was not the slightest swelling. An opening into the windpipe through the crico-thyroid space would have saved the poor fellow's life. This case went very far in inducing me to modify my opinion with respect to the paramount advantages of tracheotomy. But to proceed a little farther with the inquiry. Every one that has ever attended a case of tracheotomy after operation knows that one of its most unpleasant consequences is the tendency of the wound to close. At first it is obstructed with clots of inspissated mucus and blood, and subsequently by its own tendency to contract and close. In order to remedy this inconvenience most operators are not satisfied merely with an incision into the tube, but actually cut out and remove a portion, and it is quite possible in seeking

this object to inflict great and permanent injury. In order rightly to understand this (a point which, by the way, I have nowhere seen insisted on), it will be necessary to bear in mind that a wound in the windpipe does not heal by a reproduction of its own tissues. There is no new cartilage formed, and consequently there is no elasticity in the cicatricial membrane, which is merely stretched across from side to side of the opening. The tube here, therefore, is not circular, but to a certain extent truncated, and by the size of that truncation is its calibre diminished at that spot. Like every other product of inflammation, this new membrane continues to contract long and long after the apparent healing of the wound, and the tendency of such contraction will be to draw the edges of the wound closer, and to render the canal of the windpipe at that spot narrow, crooked, and deformed. Of course the probability of such occurrence will be exactly in proportion to the size of the piece of trachea that had been removed, and it is (I suppose) infrequent; but I have been consulted on three cases of return of suffocation from this cause, in one of which it was necessary to perform another operation lower down in the neck. This is an accident that could not possibly occur in laryngotomy, and should form an additional reason for preferring it."

With respect to the operation of bronchotomy in œdematous laryngitis the result of erysipelas, Professor Porter remarks: \* "It also occasionally happens that erysipelatous inflammation attacks the larynx and trachea and produces symptoms of dyspnœa of a singularly formidable character. In the winter of 1835-36 erysipelas prevailed to a very

\* See Porter on the Larynx, p. 96.

considerable extent in the Dublin hospitals, and many examples occurred of its seizing on the throat, either by apparently spreading to it from the head and face, or by some species of metastasis, the disease subsiding externally on its engaging the internal structures. Amongst all these cases I have not heard of a single recovery ; neither do I suppose such to be possible, considering the low and typhoid character of the accompanying fever. In most of these the submucous cellular tissue was found extensively infiltrated with sloughy and putrid matter. I am not at this moment aware that bronchotomy was performed on any of these patients, although I know it was proposed with reference to three ; and if it had been, I cannot by any means imagine it could have been attended with success. They certainly suffered from fearful difficulty of breathing, and after death the rima glottidis was found more or less obstructed ; but these circumstances perhaps only accelerated an event otherwise inevitable."

Acute affections of the larynx terminating in effusion, present, as Mr. Prescott Hewitt, the accomplished Assistant-Surgeon to St. George's Hospital, remarks very properly,\* a very great difference in the adult and in the child ; the effusion in the former taking place by far most frequently in the submucous tissue ; whereas, in the latter, it is usually poured out on the free surface of the mucous membrane. In these cases, in the adult, the effusion is purely laryngeal ; in the child, it is most frequently not only laryngeal but tracheal.

\* London Journal, February 7, 1849.



This marked difference in the localities of the effusion at these two periods of life at once points out, in Mr. Hewitt's opinion, two great divisions in which the surgical treatment will necessarily be very different. Confining his remarks to one of the divisions only, that of the adult period, Mr. Hewitt observes :—

“Effusions in the submucous tissue of the larynx, it matters not of what kind or how produced, are strictly limited to the parts above the rima glottidis. This fact already pointed out by several pathologists, has not, I think, been sufficiently dwelt on by practical surgeons. That the effusion is thus invariably limited to this region, may be proved by morbid anatomy, by experiments, and by the anatomical structure of the parts.”

Mr. Hewitt's object in the foregoing observations is to show that when an operation is called for in threatened suffocation from acute affections of the larynx in adult life, that it is advisable to make the opening in the crico-thyroid region, and to strengthen his position he quotes the late Mr. Liston, who was a staunch advocate for the operation of tracheotomy in most affections of the larynx, where an operation was required, admitted in some observations published in the *Lancet* of 1844 : “That the high operation in the crico-thyroid membrane, laryngotomy in fact, might answer in cases where there is obstruction in the rima glottidis, as when swelling has followed a scald of the glottis;” and Mr. Hewitt believes that the admission thus made by Mr. Liston for these accidents ought to be applied to most cases of acute laryngeal affections in the adult.



## LECTURE VIII.

## SPASM OF THE GLOTTIS.

I PUBLISHED some years since (in 1830) in "The Dublin Hospital Reports" observations on a peculiar convulsive disease affecting young children, which I stated might be termed "*Spasm of the Glottis*,"—a name since very generally adopted by the profession. This disease appears to consist primarily in spasm occurring suddenly and affecting the muscles of the glottis; as it increases in severity, other muscles, particularly those of the fingers and toes, become progressively engaged, and ultimately, if neglected or mis-treated, leads to severe and universal convulsions. This affection, although alluded to and described by several (amongst others by Dr. John Clarke in his "Commentaries on the Diseases of Children"), was not at the time I first wrote on it generally known or recognized. At first I was under the impression that the disease was but rarely met with and accompanied with but little danger, but further observation has satisfied me that instances of it are by no means few, and that it often proves fatal.

In some instances of the mildest form of the disease, the little patients are observed, now and again, to awake suddenly from sleep in a state of alarm and agitation, to struggle for breath, and after repeated efforts to recover

from the paroxysm with a long and sonorous inspiration, the face becoming swollen and purplish. These attacks may occur at first only on waking from sleep, afterwards more frequently; sometimes without any perceptible cause, at other times, and more frequently, when vexed or about to cry. I have found in such cases the exhibition of sulphate of quinine in half-grain doses every sixth hour and free exposure to open air of the greatest service.

In some cases the disease may, as the following published case of mine will show, be complicated with derangement of the digestive organs, and also with painful dentition. A patient whom I had been attending happened to mention to me incidentally that her child, about 14 months old, was in the habit of waking suddenly from sleep as if alarmed, breathed with difficulty, and made a loud noise like that in a fit of whooping-cough; she said also that this occurred occasionally during the day, when the child was cross; she spoke of this lightly, as of an unimportant thing. I requested to see the child; it looked pale and unhealthy; the integuments were soft and flabby; the tongue coated; the bowels relaxed or confined; the stools green and curdy; the child was irritable and nervous, and seemed to suffer from dentition; the extremities were slightly swollen, and the thumbs placed firmly across the palms of the hands. I stated that I thought the child very ill, and that probably convulsions would take place.

Next day I was summoned in haste, and found the child just recovered from a severe paroxysm of general convulsions.

The gums over the projecting teeth were divided; leeches

were applied to the temples, cold lotions to the head, and warm fomentations to the extremities ; aperient medicines were given ; the nurse, whose milk obviously disagreed with the child, was changed, and it was removed from the city to a healthy situation in the country : after one other attack of convulsions recovery was speedy and complete. The remedies which appeared to be ultimately and permanently efficacious were change of air and change of nurse.

[The following observations on "Spasm of the Glottis" are transcribed from Sir Henry Marsh's admirable paper on the subject in the fifth volume of the "Dublin Hospital Reports," which was written when Sir Henry (then Dr.) Marsh was a comparatively young man, and which we the more gladly now re-publish, as we frequently heard Sir Henry state that due credit had not been awarded him by those who subsequently had written on the subject, for the light he had in that paper thrown on the true nature and treatment of "Spasm of the Glottis."—J.S.H.]

"A fine child, 12 months old, remarkably large for its age, had been subject for four months to frequent attacks of what the parents called croupy breathing ; those attacks, they said, occurred at first only at night and rarely, afterwards occasionally during the day ; for some time the child appeared so well that those attacks were disregarded ; at length, having increased in frequency and severity, medical advice was obtained ; the treatment, which consisted in bleeding, emetics, mercurial purgatives, confinement to a heated apartment, and warm flannels next the skin, was

founded on the supposition that pulmonary inflammation existed.

When I first saw the child, the struggle in breathing was difficult and protracted, and the face during the paroxysm became quite livid : these attacks, which usually terminated with a loud and sonorous inspiration, were excited by very slight causes, such as sudden noises, the removal of the child from the nurse's arms, or any source of irritation or annoyance ; and now, instead of going off as formerly, they were, once or twice in the twenty-four hours, terminated by severe and general convulsions, which had all the characters and appearance of an epileptic paroxysm : after one of those strabismus remained ;\* there was also a swollen and puffy state of the extremities, with a spastic rigidity of the fingers and toes ; the digestive functions were greatly deranged, and the child looked exceedingly ill : it had been weaned for nearly three weeks ; a healthy wet nurse was procured ; the gums, rather as a measure of precaution than from necessity, were divided ; the temperature of the apartment was lowered, and gradual habituation to the open air adopted ; the quantity of clothing with which the child was oppressed was by degrees diminished, and after a little time the body was sponged daily with vinegar and water ; the child had already been so frequently and copiously bled, that further bleeding was not deemed advisable. Its health improved rapidly, and, restricted in nutriment to the nurse's milk, the bowels soon

\* On the recovery of the child this symptom gradually disappeared.

returned to their natural state ; the general convulsions ceased altogether, and the attacks of spasmodic dyspnœa became daily less frequent and severe. As a proof of the completeness of recovery, it may be mentioned, that a few weeks having elapsed, this child was extensively scalded, and yet no convulsive or spasmodic symptom ensued. The child, moderately covered, almost lived in the open air, and during the whole process of dentition a succession of fresh wet nurses was provided. He is now, after the lapse of some years, a fine and healthy boy. In this case the change of nurse, and the substitution of the tonic for the heating regimen, were attended with results at once speedy and satisfactory.

A weakly and delicate child, 2 years of age, had been subject for some time past to occasional and sudden attacks of dyspnœa, during which the inspirations were observed to be short and frequent ; the head was drawn back ; the sense of suffocation appeared urgent ; these attacks, which were protracted and severe, ended in a loud whoop or crow ; between these there was sometimes an interval of several days, and during this period the child appeared in tolerable health, but irritable and easily alarmed. After some time the paroxysms occurred more frequently, and began to excite, in the minds of the parents, considerable apprehension : the disease had been treated as a catarrhal affection. On my first visit the child was confined to bed, and laboured under well-marked symptoms of remittent fever ; the pulse and respiration were accelerated, skin hot, tongue coated and florid at the edges, the papillæ red and prominent, thirst, and the desire of cold drink urgent, the

fæces thin and fœtid ; there was continual picking at the nose, and the diurnal exacerbations of fever were well marked ; the veins of the head appeared unusually turgid ; there were frequent attacks of spasmodic dyspnœa, such as have already been described : there was spastic contraction of the flexor muscles of the fingers and toes ; the extremities were swollen, and of a slightly livid colour ; this child suffered greatly from dentition, the teeth were unusually large, and were protruded at a very late period ; on dividing the projecting and vascular gum of one of the molar teeth, some purulent matter was discharged. This child had had congenital cataracts, at the age of three months both eyes had been operated on ; severe ophthalmia ensued ; he had been copiously bled, and calomel had been given very largely ; the child scarcely survived the treatment, and remained afterwards very feeble, emaciated, and delicate. A few leeches were now directed to be applied to the temples, calomel in minute doses was given every third or fourth hour, and occasional doses of castor-oil ; the febrile symptoms gradually subsided, the patient recovered slowly, and for some weeks remained without any return of the spasmodic attacks. After some time the child again began to suffer from difficult and painful dentition, and the spasmodic paroxysms recurred with violence ; whilst in the act of dividing the gum, the spasmodic attack came on suddenly, and so urgently, that the face became livid, and there was complete opisthotonos ; this spasm lasted so long, that respiration was for a time suspended, and for a few seconds I felt apprehensive lest the child should have died in the struggle.

At length, after a long and sonorous inspiration, the spasm subsided, leaving the child in a weak and exhausted state. These formidable attacks recurred frequently, and were followed soon by general convulsions; it was now determined in consultation that the child should be bled from the arm. The blood was allowed to flow until a perceptible effect was produced upon the system: for ten days afterwards there was not any return of convulsions or spasms: at the end of this time the paroxysms of dyspnœa, terminating sometimes in general convulsions, became again frequent. There now existed extreme emaciation, languor, complete anorexia; fingers and toes rigid; extremities purple and œdematous; nervousness, tremor, and starting at the slightest noises; under these circumstances, an injection, consisting of five grains of tobacco-leaves in six ounces of water was administered; the specific effects of tobacco in a marked degree ensued, and it was remarkable that for a month afterwards no convulsive symptoms reappeared. About this period a slighter recurrence of these symptoms led to the removal of the child from the city to the country, upon which they ceased immediately, and the child improved rapidly in health and strength; recovery appeared now so complete that the child was brought back to a large and newly-painted house in the city, when after a few hours the spasmodic attacks recurred with violence; on a second removal to the country they ceased at once; a similar experiment was a second time tried, and with precisely similar results; and it is a curious fact, that two other children were attacked with a similar spasmodic affection in this same newly-painted house; of these one



died in a convulsion, the other, on being sent to the country, recovered : the child whose case has just been related had been for years free from any spasmodic affection, but remains delicate, suffering severely from scrofulous disease.

This case exhibits the disease complicated with remittent fever and with painful dentition ; it also proves that the disease may exist to a most alarming extent and yet recovery take place ; the powerful effects of tobacco in allaying spasmodic action are also remarkably displayed. The importance of change of air as a remedy of prime efficacy in this affection is strikingly exhibited. Nor is it undeserving of notice that spasmodic disease seemed in two instances to be caused, and in this reproduced, by the contaminated air of a newly-painted house.

A child, 9 months old, was brought to the Institution for the Diseases of Children, labouring under the spasmodic disease already described ; this child had cut the four incisor teeth ; not having been at the time aware of this disease, I merely prescribed some medicine with the view of improving the digestive functions ; there was no indication to lead to the conclusion that the child suffered from dentition. Some days afterwards, being sent for to see this patient, I found it violently and generally convulsed ; the convulsive paroxysms succeeded each other at short intervals of time, and in about twenty-four hours proved fatal.

The body having been examined twenty-six hours after death, no morbid appearance was discoverable either in the abdominal or thoracic viscera ; the mucous membrane of the larynx, trachea, and bronchi exhibited a perfectly



natural appearance ; a very large quantity of fluid was found to have been accumulated in the ventricles of the brain ; no morbid change had taken place in the brain ; this was the only instance in which the disease under my observation had terminated in hydrocephalus."

The following case was communicated to me by Dr. Johnson, Professor of Midwifery to the Royal College of Surgeons in Ireland :—

"I was consulted some time ago about the child of the Hon. Mrs. P., and received the following history of the case : He was attacked on the third day after birth with laryngeal spasm and a crowing inspiration, in such a degree as to excite great apprehension in the minds of the parents : these attacks returned at intervals, when the child was irritated, and on awaking from sleep, until the third month, when they disappeared without any apparent cause. Between the fifth and sixth months they returned, accompanied by the swelling of the hands and feet, and the rigidity of the thumbs and toes described by Dr. Kellie (in the *Edinburgh Medical Journal*), and terminated in general convulsions : at this period he cut two incisors in the lower jaw ; the attack of crowing inspiration returned frequently during dentition, sometimes alone, at other times accompanied by the rigidity of the thumbs and toes, but never terminating in convulsions until he was cutting the first molar teeth. At the time that I was called to see him the rigidity of the toes was so great as to prevent him from walking, and the screaming such as to render the parents apprehensive of the return of convulsions. On examina-

tion of the gums, I found the canine teeth making their appearance; the gums were divided, an issue inserted in the back of the neck, and aperient medicines were given. The attacks, however, were neither diminished in frequency nor violence until the child was removed to the country, since which time he has had no return of the disease. He was a remarkably large and strong child for his age, which left the impression on my mind that he was over fed; however, on inquiry, I found this was not the case."

This case is interesting, inasmuch as it proves that this disease is not necessarily connected with the process of dentition,\* although unquestionably exasperated in its symptoms, when the teeth are cut with pain or irritation; this case too, as the others, evinces the great value of change of air in the treatment.

I am indebted for the following interesting case to Mr. Newton, Licentiate of the College of Surgeons in Ireland, upon whose soundness and accuracy of observation the fullest reliance may be placed:—

"A child, aged 19 months, of a violent temper, had always been very healthy until it was about 17 months old, when he had a mild attack of whooping-cough, since which he was observed to have occasional fits of difficulty of breathing on awaking from sleep, during which his face became livid; these lasted for some time and were terminated by a long,

\* Dr. Johnson has mentioned to me a case of this disease, the symptoms of which did not appear until after the teeth had been all cut.

deep-drawn inspiration, with a crowing noise ; this did not excite any alarm in his friends.

On the morning of the day on which he died he took a hearty breakfast of stirabout, and in about an hour afterwards he vomited ; he was in good spirits and apparent good health until five p.m., when he was put into a passion ; his breathing suddenly became difficult, his face livid, and he expired in about five minutes.

*Dissection seventeen hours after death.*—Extremities stiff, body fat, some lividity about serotum and posterior parts of the body.

On removing the skull cap, a large quantity of dark-coloured fluid blood escaped ; there was great turgescence of the vessels of the membranes of the brain. The brain was healthy ; on removing it a considerable quantity of blood escaped from the spinal canal.

*Mouth and Throat.*—Uvula somewhat elongated, tonsils slightly enlarged. The rima glottidis was very much contracted. In the larynx, upper portion of the trachea, and in the œsophagus, numerous small portions of undigested oatmeal were observed : the mucous membrane of the air tubes presented everywhere a natural appearance. The lungs and right side of the heart were engorged with dark-coloured blood. The mucous membrane of the stomach, about the pylorus, was softened and eroded. The muciparous glands of the small intestines were enlarged. No other disease was observed in any part of the body. On examining the larynx on the following day, the rima glottidis was found to have recovered its natural dimensions."

It is clear in this case that the spasmodic closure of the

rima glottidis was the immediate cause of death ; no morbid change sufficient to account for death having taken place in any of the viscera : the turgid state of the vessels of the brain and lungs, as well as the gorged state of the heart, were evidently the effect of the suffocative struggle, and resulted altogether from the manner in which death took place. The symptoms at the commencement are thus proved to be purely spasmodic, and it is only when the disease increases in severity, and when general convulsions arise, that the brain or its membranes becomes the seat of disease. It would be interesting, on any future occasion, to examine accurately the state of the pneumogastric nerve. The seat of the disease may perhaps be found to exist at the *origin* of this nerve, and topical applications, made as nearly as possible to its origin may be found to constitute an important part of the treatment.\*

It seems to me not unimportant to remark, that all the cases of this disease which I have witnessed, have occurred in children either themselves exhibiting marks of the strumous

\* Dr. Monro, in his work on the "Morbid Anatomy of the Brain," describes a variety of acute hydrocephalus ushered in with spasmodic symptoms affecting the muscles of the glottis, and in one case, describing the morbid appearance, he says, "all the nerves at their origin were sound, except the fifth and eighth pairs, which were also of a deep scarlet colour and covered with turgid vessels. On removing the brain, by cutting through the medulla oblongata, a considerable quantity of serum rushed from the upper part of the spinal canal. The vessels of the spinal marrow were turgid, those at the cervical portion of a vermilion red colour, and those of the lumbar portion of a dark red hue. The eighth pair of nerves was of deep uniform red along its whole tract, as far as its branches going to the lungs."

diathesis or sprung from scrofulous parents. This bears practically upon the subject, inasmuch as it enhances the value in treatment of pure air, healthy nutriment, and tonic remedies.

If we take a survey of the several cases of this disease which have been stated, we learn that it varies much in degree, and that its complications are numerous. In its mildest and least complicated form the spasmodic action is confined to the muscles of the glottis, and the treatment consists in improving the general health, and in giving tone to the nervous system. The symptoms in such cases will rarely fail to yield to some of the vegetable or mineral tonics, pure and bracing air, and a well regulated diet; in some cases I have perceived, I think, advantage to arise from some of the antispasmodic medicines, and amongst these none has appeared to me more beneficial than the old-fashioned medicine, the *tinctura fuliginis*; but when the disease is complicated with painful dentition, derangement of the bowels, or any febrile movement in the system, the primary object of the treatment must be to remove these accompanying ailments; until this be effected the treatment applicable to the spasmodic affection, though it may mitigate its severity, will fail to eradicate the disease. When the spasmodic symptoms extend themselves, and implicate the muscles of the extremities, the disease assumes a more formidable aspect, and soon, if not checked in its progress, paroxysms of general convulsions will establish themselves: in this stage the membranes of the brain become so frequently engaged, that the utmost vigilance on the part of the practitioner is required to prevent the

occurrence of such mischief; yet it must not be lost sight of that the disease, even in its mildest form, is attended with danger; one case is recorded of sudden death during the spasmodic closure of the glottis; this occurred in a child who was otherwise in perfect health, and I have heard of several instances of the same kind. In every stage of the disease, therefore, we should be aware of and guard against the liability to sudden death; all needless sources of irritation should be avoided, and the child closely watched, and carefully held and supported during the paroxysm of dyspnœa. In irritable and passionate children the danger is increased. Dr. Johnson has stated to me, that he has seen a child in a state of asphyxia caused by this disease, recovered from apparent death by the instantaneous application of artificial respiration.

Dr. Cheyne in his treatise on hydrocephalus,\* gives a very just delineation of this affection; he describes it as consisting in a crowing inspiration with purple complexion, *not followed by cough*; he mentions the rigidity of the muscles, the thumbs clenched in the hands, the peculiar livid and swollen appearance of the extremities, and the occurrence of universal convulsions; he states that seven instances to his own knowledge have ended in death; and in regard to treatment, he has dwelt with peculiar emphasis upon the importance of change of air and change of diet, as the means of greatest efficacy in effecting a permanent removal of the disease.

Dr. George Kellie of Leith has published a short paper

\* Second Edition, page 16.

entitled, "Notes on the Swelling of the Tops of the Hands and Feet, and on a Spasmodic Affection of the Thumbs and Toes which very commonly attends it."\* This condition of the extremities he has described very accurately, and the reader will do well to peruse his paper with attention; it must, however, be remarked, that this symptom belongs to a more advanced stage of the disease, and does not exist until either the general health be considerably impaired, or the spasmodic symptoms have increased in frequency and severity; it is, therefore, not essential to the disease.

Mr. Porter, in his valuable observations on the surgical pathology of the larynx and trachea, alludes to this disease, and particularly mentions the fact that it occasionally happens that the child, during the convulsions, dies before assistance can be procured.

In the *London Medical and Physical Journal*, vol. xlv., p. 9, this disease is spoken of by W. Pretty, Esq., under the name of cerebral croup, a denomination which is objectionable, because it is more than doubtful whether in this affection, at its commencement, the brain be at all involved; and secondly, because in its symptoms and progress it is altogether distinct from croup. He describes with accuracy the symptoms in three of his own children; of these, one died, the others recovered. In speaking of the treatment of one of those cases he concludes with the following words:—"The spasms frequently recurring, his nurse was changed, and he was sent to the country; and

\* *Edinburgh Medical and Surgical Journal*, October, 1816.



he is now a fine healthy little fellow." He justly dwells upon the importance of attending to the state of the head during the entire progress of the disease, and also upon the necessity of dividing the gums whenever the process of dentition may appear to be a source of irritation. In the fifth volume of Richter's "*Specielle Therapie*," there is a tolerably accurate account of this spasmodic affection.

The facts which have been recorded, and the references which have been made, prove that this disease is of more frequent occurrence than has generally been supposed.

A controversy has been maintained for a long time as to the existence or non-existence of spasmodic croup; a disease which I believe to be nothing else than the first stage of inflammatory croup, or else a slight and transient attack of croup in nervous and irritable children. The disease which forms the subject of this paper is essentially different from every form and variety of croup; it is a purely spasmodic affection, and in all its stages is characterized by convulsive movements, partial or universal, and in its earlier stages all its symptoms will be aggravated if it be confounded in treatment with any inflammatory affection of the larynx or air tubes. This mistake has been often made; it therefore seems to me important to distinguish this disease from other affections with which it has been often confounded, and to set forth the principles of treatment which are directly founded on this diagnosis: I may also mention, as an additional reason for dwelling on the characteristic features of this affection, that I do not find it described in any systematic work in the English or French languages.



## LECTURE IX.

## JAUNDICE.

JAUNDICE, which must always be regarded as a symptom of a deranged state of the system, and not as a disease, occurs as might, *a priori*, be expected in a great number of morbid conditions of the body totally differing in their nature. No age is exempt from jaundice; thus it is met with in new-born infants as well as in adults and in persons far advanced in life. Jaundice may be present where there is and where there is not inflammation.

Jaundice, although consisting, as we have seen, of many forms, may, I think, be very fairly (for practical purposes) divided into the curable and incurable. The mechanical forms produced by the impaction of a biliary calculus in the ductus communis, by aneurismal pressure or by organic disease of the head of the pancreas, for instance, are of that nature in which medical means unfortunately can be of little service. There is a form of mechanical jaundice caused by enlargement and induration of the absorbent glands in the vicinity of the pancreas, of which an interesting specimen now rests on the table before us. In this case one of the glands was, as you perceive, very much enlarged and swollen, and caused pressure on the common duct just as it opens into the duodenum. The duct behind

the obstruction was extremely enlarged, and filled with bile. I once met with a very interesting case of biliary calculus in an elderly lady of a large flabby, fat, indolent constitution, in which case a calculus passed into the intestines, became impacted in the canal, gave rise to a great deal of localized pain, high fever, and obstinate constipation. An abscess formed; a sinus was established through which three calculi were extracted, followed by fluid having the colour and appearance of feculent matter. The sinus healed up, and she never since has been troubled with calculi symptoms, although previous to the attack she was always of what is vulgarly, but not inaptly, called a bilious or semi-jaundice constitution. From the intensity of the symptoms in this case, I think I am justified in believing that the calculi made their way to the surface by the process of ulceration.

Persons who have sojourned in tropical climates are from obvious reasons more liable to be affected with jaundice than those living in cold countries. Even the lower animals in warm climates, as, for instance, in India, are very liable to inflammation of the liver, where it is well known that many quadrupeds, as camels, especially those brought from a distance, are often attacked by hepatitis, which not uncommonly kills them. Anything that will tend to the production of inflammation and congestion of the liver may become an exciting cause of jaundice—thus intemperance, extremes of heat and cold, the suppression of accustomed discharges, may all in their turn tend to produce jaundice. Both acute and chronic inflammation of the liver are fertile sources of jaundice. Any cause, in

fact, which either diminishes or suspends the secretion of the biliary fluid may produce jaundice.

There is a very interesting form of jaundice to be met with occasionally in fevers, as I have before stated to you more than once during the session. That form of jaundice arising in cases of gastric fever is not of a formidable nature, but where jaundice appears in fevers in which the brain is much engaged—in fact, in what are called brain-fevers—the supervention of jaundice must be looked on as a formidable and often fatal sign.

There is a very rare form of jaundice in which there is no obstruction of the biliary secretion, but an over-secretion of it, and this form I have only met two or three times in practice : in such cases the evacuations, instead of being devoid of bile, as in other forms of the disease, are loaded with dark-brown or bottle-green bile, and yet all not getting exit through the ducts, some is driven back on the constitution.

There are forms of jaundice produced by the passions, as fear, &c., and others by injuries of the head ; thus a man gets a knock on the head, and in a very short time he becomes jaundiced. I recollect a gentleman who was under my care for some time for biliary obstruction without much relief, and who on being chased by a bull and leaping over a wall had a most copious bilious evacuation which entirely cured him. We all have heard of recruits on hearing the first shot in battle-field having copious evacuations in their breeches ; boys on being hoisted at school frequently have an immediate discharge from the bowels. It, I think, may be somewhat in the same way

that jaundice is produced by injuries of the head—that is through nervous influence.

Gall-stones may exist without jaundice, as proved by the case of the lady with the sinuous opening I have just detailed to you, in whom jaundice never existed.

Patients suffer most intensely in the passing of gall-stones, the pain which is intermitting being referred to the right hypochondriac and epigastric regions; no fever; pulse often below the natural standard. This slow character of the pulse, excruciating pain in the pit of the stomach, and absence of fever, constitute the chief diagnostic marks of the passage of a biliary calculus through the ductus communis; and I wish particularly here to impress on you the importance of an unerring diagnosis in these cases, inasmuch as I know too well from experience that there are but few cases in the practice of medicine in which more serious mistakes are committed than in these in question.

In jaundice from impacted biliary calculi, I have often felt the gall-bladder distended far below the false ribs—a condition which, when present, will materially assist in arriving at a true diagnosis. The distended gall-bladder in some of these cases has even given way; sometimes opening on the surface by ulceration after forming adhesions to the parietes of the abdominal cavity, as in the old lady already referred to; at other times bursting into the peritoneal cavity, and thus terminating fatally by peritonitis from extravasation. Our sheet anchor in the painful passing of a gall-stone is opium, which should be given in large doses, at the same time hot stupes, medicated if necessary, should be applied to the abdomen.

There is a most interesting form of jaundice, the result of duodenitis, to which I drew the attention of the profession some years since (1822) in a paper published by me in the third volume of the "Dublin Hospital Reports," under the heading of "Cases of Jaundice with Dissections," to which I would refer you. In jaundice from duodenitis we should, if acute, use the antiphlogistic regimen, by bleeding generally and locally, and by the administration of mild mercurials; but in jaundice from the chronic form of duodenitis I have more faith, as you will collect from a reference to the paper just alluded to, in counter-irritation than in any other remedial agent. In the case of jaundice, at present in No. 5 ward, one admittedly the result of chronic duodenitis, you observe the woman is much better. In that case you recollect we established a blistered surface over the duodenum, and gave her ox-gall with aloes, not that I like drastic purgatives in these cases, far from it, for they often produce dysentery. Here we gave the aloes in sufficient quantities to keep the bowels gently open, and the gall to replace the want of the natural bile.

[Chloroform has of late been used with advantage, both externally and internally, in the painful passage of gall-stones.—J.S.H.]

As to jaundice connected with abscess of the liver, some years ago I had a very fair opportunity of examining the subject. We had in the dissecting-room two bodies with an abscess in the liver in each; one of them was deeply

jaundiced, and had the abscess in the right lobe, the other was not jaundiced and had the abscess in the left lobe, which proves that it is the connexion of the abscess and the irritation and inflammation of the ducts which leads to the jaundiced condition. The forms of jaundice described by Dr. Baillie as the black jaundice, and which he appears to think depends on a peculiar state of the constitution and skin, I shall not now speak of, but refer you to his writings for information on the subject.

In respect of the symptoms of jaundice the discoloration of the skin, conjunctiva, &c., is most generally preceded by marked constitutional disturbance; thus there is derangement of the digestive functions, general debility, lowness of spirits, nausea, sometimes vomiting, constipation, tongue furred and yellow. In jaundice there is often a drowsy condition of the brain, sometimes coma, from which latter there is seldom or never a recovery. Frequently vision is impaired, all objects presenting a jaundiced hue. As a general rule the evacuations are devoid of bile, presenting a whitish or greyish colour; in time the whole surface of the body assumes a yellow hue, varying in shade in different parts of the body. Although, as I have already stated, jaundice is most usually ushered in by constitutional disturbance, still at times it evinces itself most unexpectedly without the slightest premonitory notice, and may continue for a longer or shorter time without the presence of the bile in the system at large producing any marked inconvenience. Of such cases I have met many in the course of my practice. In jaundice, although the eye does not escape the yellow tinge, still,

as I have before observed, it does not follow that the patient's vision partakes of the same hue, and even when present, it may assume an intermittent character.

[In alluding to the absence of yellow vision in jaundice, Dr. Stokes says :\* “ Dr. Graves explains the absence of yellow vision by assuming that in such cases the humours of the eye escape being tinged. This appears no doubt extraordinary, but it appears possible from the following fact:—I recollect two cases of jaundice from a cancerous state of the liver, the fluids were all tinged, yet the gall-bladder was found to contain a beautiful limpid fluid. These cases certainly go far to prove the possibility of Dr. Graves' position. He remarks also that where the fluids of the eye are tinged that the alteration takes place so very gradually that the patients do not always observe the change of colour. This explanation may answer in slow cases, but not in acute forms. Dr. Graves is further of opinion that the want of the power of comparison may prevent a jaundiced patient seeing objects really yellow—J.S.H.]

The treatment of jaundice from inflammation of the liver will next briefly occupy our attention. Here if the inflammation be acute, you must deplete locally and generally, here you will find the exhibition of mercury, together with the occasional use of the supertartrate or sulphate of potass, of much value. In the more chronic forms alterative doses of mercury, gentle aperients, the preparations of

\* MSS. Notes in possession of the Editor.



iodine both internally and externally, together with counter-irritation and a cautious regimen, will prove useful. Of late years, especially on the Continent, the muriate of ammonia has been much lauded in cases of jaundice arising from hepatitis.

Nitro-muriatic acid has long been esteemed as of value as a cholagogue, and certainly it does in the chronic forms of hepatic obstruction appear to be at times most serviceable. It is a remedy which ought in my mind in these cases be used both internally and externally over the region of the liver.

In jaundice arising from chronic hepatitis mild emetics come to our assistance in stimulating the liver to its healthy functions; hence it is that short rough sea voyages (as to Holyhead from Dublin, for instance) are so often in such cases very properly recommended by physicians, and followed by marked beneficial results.

Alkalies, especially the carbonated ones, would appear to have a solvent power over the hepatic secretion, for which reason recourse is often had to them in chronic jaundice, the natural chemical alkaline springs possessing apparently in such cases superior advantages.

[We take this opportunity of republishing Sir Henry Marsh's paper "On Cases of Jaundice with Dissections," referred to in the foregoing Lecture, premising that it was an essay of which Sir Henry was not a little proud, as being not only one of his earliest but one of his most successful productions as an author—an opinion which he



more than once expressed to the Editor of these Lectures.  
—J.S.H.]

Jaundice is a symptom which arises from a great variety of causes. In the majority of instances its origin may be traced to some obstruction of a merely mechanical nature, such as gall-stones, tumours, indurations of the liver, or pancreas; and such are the causes of jaundice which have been chiefly dwelt upon, and most fully discussed, by those who in their writings have treated on the subject. But there are cases of jaundice, and those not a few, in which dissection fails to discover any mechanical obstruction: in which the absorption of bile, and the admixture of this fluid with the blood, have been produced by circumstances which leave no trace behind,—at least none that the most accurate anatomical investigation has as yet been able to detect. Such cases of jaundice, though but glanced at by the generality of writers, deserve to be more closely looked into, and are often connected with symptoms and appearances, the knowledge of which is not only satisfactory to the mind, but highly advantageous in conducting the treatment. The object of this paper is to bring forward instances in which icterus is connected—sometimes with a deranged and even fatal affection of the brain; sometimes with a diseased condition of the mucous membrane of the intestines. It happens not unfrequently that patients labouring under jaundice, are seized suddenly with symptoms of cerebral disease, and dic phrenitic. Upon looking into several cases of this kind, I find that this form of disease exists principally in persons whose nervous system has

from any cause been previously injured and weakened. The first case of this kind which excited my attention was one published by Dr. Cheyne in the first volume of the "Dublin Hospital Reports," p. 282.

The subject of this case was a young woman whose strength had been broken down by repeated and protracted courses of mercury; her constitution was peculiarly susceptible of mercurial action; she was a wretched, emaciated, unhealthy creature, confined almost entirely to bed, and breathing for several months the impure air of the Lock Hospital. It is proper also to mention that she had been using for a considerable time before her death the arsenical solution, in small repeated doses. From this medicine she appeared to derive benefit; when at a moment least expected, symptoms of violent phrenitis supervened, and rapidly terminated her existence. Whilst in attendance at the Lock Hospital, I had daily opportunities of witnessing the progress of this case, and from my note-book the history of it, which has been published, was derived. The condition of the large intestines in this female was very remarkable; the quantity of knotted fæces which occupied the intestinal pouches was almost incredible: and this their condition the more claims attention when it is known that alvine evacuations had been regularly maintained during the whole time of the residence of this patient in the hospital. These were fluid and watery stools, such as are frequently carried off by medicine, whilst scybala in abundance remain behind. That this is often the case every physician is aware; but I believe it is not generally known that this state of the large intes-

tines is sometimes a cause of jaundice.\* While pursuing the dissection of the body of this female, the following curious appearance was exhibited: bile, mixed with a substance resembling curd, flowed in considerable quantities from the lactiferous ducts; the mammæ appeared full, and by a very moderate pressure there were obtained several ounces of a tenacious yellow substance, bearing all the visible characters of pure bile; all the serous membranes, as well as the skin and adnata, exhibited likewise the bilious tinge. We cannot, I think, admit the opinion of the older writers, that bile may make its appearance in the body without having been separated from the blood by the gland, whose peculiar office it is to secrete this fluid. Such an opinion seems to me contrary to every known law to which the process of secretion is obedient. We can hardly admit that urine may be found without kidneys to secrete it, or milk where the mammary glands exist not; there are, however, facts which establish beyond a doubt that a fluid (urine for instance) having been secreted, and some obstacle existing to prevent its removal from the system by the usual course, is absorbed, and either deposited in the ventricles of the brain, or else its presence is detected in the matter perspired, or it is even found to accumulate in the stomach, and is rejected by

\* Of this fact I was then ignorant, nor was it until long afterwards, having met with a similar case, that I was led to the conclusion that a long-continued obstruction in the large intestines becomes occasionally the immediate cause of icterus. The symptoms of the case which led me to adopt this opinion I shall presently relate.

vomiting. Of this interesting fact I met lately with a well-attested instance.

In like manner the bile having been secreted, and not suffered to descend in the usual way, is absorbed; and appears in the urine, skin, tears,\* serous membranes, brain, and even, as in this female, finds its way to the mammæ: its removal from the system being attempted not only by the skin and kidneys, but also through the medium of the lactiferous ducts. I obtained, from Dr. Cheyne, a few days since, the following communication, which I shall give in his own words. "Last summer I visited a lady in jaundice with the following symptoms:—Skin and urine deeply charged with bile; slight anorexia; languor; stools pretty natural, as were the tongue and pulse. The indisposition was so slight that the individual in question had no intention of sending for a physician, till she discovered that the bilious tinge of her skin was imparted to her linen. To satisfy my doubts, she repeatedly wiped her face with a cambric handkerchief, which thereby acquired a saffron colour. Her liver was not sensibly affected in respect of enlargement or tenderness. She speedily recovered; indeed her recovery might be termed spontaneous, nothing having been prescribed for her but some mild purgative medicine. She was directed to use light animal food, to abstain from wine, and avoid fatigue." This fact decisively establishes the presence of bile in the matter perspired. I have not seen, nor have I been able to learn, any instance in which the milk of a nursing woman was

\* See Heberden's Commentaries, 4th edition, page 206.

tinged with bile. I am not aware that any such fact is on record, yet it does not seem to be an improbable occurrence. Though these observations do not bear directly on the subject we are engaged in, yet the curious fact of bile being found in the female breast seems to warrant this digression.

But to return. This patient having had the nervous system debilitated by frequent courses of mercury, by impure air, and all the melancholy circumstances of her forlorn and wretched situation (for unhappiness was portrayed in her countenance) was affected with jaundice, and whilst in this state high cerebral excitement having suddenly supervened, she survived its violence but three days. I suppose, the opinion, that long, frequent, and severe courses of mercury, do in many constitutions weaken and injure the nervous system, will scarcely be controverted. Indeed this seems to me to be one of the worst effects of prolonged mercurial action. I could easily bring forward facts, which establish beyond question its pernicious effects upon the brain and nerves, and particularly in very young children. Violent mania and convulsions are sometimes consequences of its injudicious administration; we cannot therefore be surprised that, in delicate constitutions, mercury, even in small quantities, should affect injuriously the cerebral and nervous systems.

I shall now proceed to notice the case illustrative of the fact that the cause which prevents the free descent of the bile and produces jaundice resides sometimes in the large intestines; the connexion which is known to exist between the functions of the brain and those of the liver being also

remarkably exemplified in the same case. It is as follows : Mr. P., a very old gentleman had had for many years of his life a reducible scrotal hernia on each side, complicated with hydrocele of the tunica vaginalis testis on the right side. He was of an anxious turn of mind, and exceedingly irritable. He had reached the 80th year of his age, having enjoyed till then uninterrupted good health. It was about this period of his life that symptoms of disease first appeared. He was affected with jaundice, for which he was treated by Drs. Percival and Falloon ; and the disease was completely removed. Several months afterwards I was sent for in haste, and informed that he was bleeding profusely on his night-chair. For some time past he had complained of a dull, heavy, and very distressing pain about the anus and lower part of the back ; this pain was much increased whenever he went to stool. He had been treated for internal piles ; an aperient electuary was daily administered, and evacuations regularly procured. When I saw him the skin was yellow, harsh, and dry ; the adnata deeply tinged ; the pulse full, intermitting every fourth pulsation, and not increased in frequency ; the tongue black, dry, and thickly coated ; urine scanty and high-coloured ; appetite extinguished ; vertigo, debility, loss of spirits, impaired memory, incoherence in manner and language, irresistible drowsiness, and disposition to sleep. I found him sitting on his night-chair in a state of considerable alarm. On inspecting the matter evacuated, it appeared to consist chiefly of pure, dark-coloured, clotted blood. I also perceived at the bottom of the vessel a few hard round lumps of fæces. This appearance led me to suspect the cause, as well of the

hæmorrhage as of the other symptoms, and in consequence I directed pills containing each a grain of scammony, a grain of rhubarb, and a grain of sulphate of kali. Of these pills, two were directed every second hour, till the bowels should be freely evacuated. Visiting him the following day, I was not a little surprised to observe a large vessel more than half filled with scybala, which were everywhere tinged with blood. The same treatment having been continued for several successive days, these hardened fæces were daily evacuated in considerable quantities; and with them the jaundice and every other morbid symptom quickly disappeared, so that in a few days this old gentleman was restored to his wonted health, strength, spirits, and appetite. There still remained with him, however, a disposition to reproduce those morbid accumulations; whenever they were again produced, jaundice reappeared, and with it loss of memory, vertigo, drowsiness and incoherence. On one occasion the muscles of the left side of the face were paralyzed; this symptom, as well as a slight paralysis in the left arm, disappeared completely, as soon as the bowels were fully evacuated. Afterwards, the bowels being maintained in a moderately lax state by such medicines as are best calculated to bring away solid matter, the diet carefully regulated, and consisting chiefly of soft and fluid materials, and exercise, such as an old and feeble frame could easily bear, being enjoined, the feculent accumulations were prevented; jaundice warded off, and the functions of the brain were free from derangement.

In this case we are furnished with another instance of the connexion which exists between obstruction in the large



intestines and jaundice ; and also of the connexion which may be traced between this latter symptom and an excited and deranged condition of the cerebral functions. Here, too, as in the former case, aperient medicines were daily administered, fluid fæces, slightly tinged with bile, regularly evacuated, and yet the bowels remained loaded with solid matter. I have remarked in dissection, that in those pouches in which scybala are lodged, the mucous surface against which they rest is frequently reddened and vascular. The irritation of these hard substances accounts for the hæmorrhage, which in this old gentleman had been attributed to internal piles ; it seems to me also that the loss of blood added much to the efficacy of the purgative pills which probably would not otherwise have so effectually unloaded the bowels.

A case, not unlike the preceding, and interesting in a practical point of view, I shall briefly relate : Some time ago I was requested to visit a very old lady, who had been remarkable for the liveliness of her disposition, the excellence of her memory, and an uniform flow of spirits. I found her much changed : she was now listless, sleepy, and forgetful, the names and persons even of her own immediate family she forgot. Her tongue was much loaded ; the palms of her hands were dry and hot ; a continual state of fever was maintained, and her sleep was disturbed and unrefreshing. She had conceived for her food so strong a dislike that taking it seemed to her like the swallowing of medicine. On inquiry I learned that an apprehension on the part of her friends of the debility which was fast increasing, induced them to force upon her continually large

quantities of the most nutritious food. Hence the stomach and bowels were oppressed and overloaded. The bile could not easily descend, and the functions of the brain were from sympathy impaired. I directed much smaller portions of food, at regular intervals of four hours; daily exercise in a chair placed upon an elastic board; and small doses of castor-oil to unload gently the bowels. Under this treatment her spirits were quickly restored, and she again became what she had formerly been.

Care must be taken in old people not to oppress the digestive functions by an excess of food. This precaution is peculiarly necessary at a period of life when the organs of digestion are daily losing their tone; and when exercise, so necessary to the due performance of the gastric and hepatic functions, can little, or scarcely at all, be enjoyed. Hence the best rule for maintaining clearness of intellect in old age, is to proportion carefully the quantity of food to the powers of digestion, and to take good heed that the former shall not exceed the latter. It is remarkable that this old lady grew fat and strong, and regained an appetite so keen, that instead of forcing her to take food, it now became necessary to restrict the full indulgence of her appetite.

A strong muscular man, about 40, was admitted into one of the fever wards at the House of Industry during the prevalence of the epidemic fever which raged lately in this country; he was deeply jaundiced; his tongue was perfectly dry and almost black; his pulse natural. I observed a wildness about him which led me to augur the worst. The opening of the temporal artery and an active pur-

gative were directed. He declared he was quite well, and would quit the hospital. He vociferated repeatedly that no man should alter his purpose or persuade him that he was not in perfect health. It was vain to remonstrate; he would not listen to the assertion that his situation was one of the most imminent danger. He obstinately resisted the adoption of any remedy whatever. A few hours afterwards he became wildly and furiously delirious, fell into violent and protracted convulsions, and expired at midnight. Permission to examine the body, I regret to say, was not granted. Here is another case of jaundice terminating in a fatal affection of the brain and nerves. If it be true, as I think I shall hereafter be able to prove, that the contagion of fever strikes first upon the nervous system, then this case furnishes us with a strong corroboration of the opinion that jaundice, however produced, in a person whose nervous system has been debilitated and impaired, is apt to issue in a disease of the brain, which often terminates fatally and rapidly.

A girl, about 20 years old, who while under the influence of mercury had been exposed to cold, and had lived intemperately, was admitted into the Lock Hospital for the cure of venereal ulcers situated on the genitals and various parts of the skin. Whilst in the hospital she was informed abruptly of the death of her uncle, the only relative who had shown her kindness. An universally jaundiced appearance was soon observed to have taken place. Not long afterwards, febrile symptoms having appeared, she was transferred to the Hardwicke Fever Hospital; from thence she was ordered to the Whitworth, where (no bed

happening to be vacant) she was not received. For several days after her return home there was no remarkable change in the state of her health. She continued to be deeply jaundiced ; at length, quite suddenly, symptoms of a very alarming nature appeared. She lay in a state of apparent insensibility ; when spoken to she seldom, and with difficulty, replied ; her eyelids drooped ; her breathing was stertorous ; there was so much pain in the abdomen that peritoneal inflammation was apprehended. At the approach of night she could hardly be restrained in bed ; she screamed violently, and was constantly agitated. She was seen in this state and treated by Mr. Read, one of the surgical pupils at Steevens' Hospital. When I saw her she was insensible ; the eyes were fixed ; the carotids throbbed violently ; and she was deeply jaundiced. In the evening she was again thrown into a state of extreme agitation, accompanied with loud screams. After midnight she was seized with convulsions, which came on in rapid succession, and before morning she expired.

Dissection, which was performed a few hours after death, exhibited some congestion of the vessels of the brain ; there was not any effusion on the surface, nor unusual deposition of fluid in the ventricles. The substance of the liver was deeply tinged with bile ; its structure natural. The gall-bladder was contracted, and contained an extremely small quantity of dark-green, ropy fluid ; its internal membrane was very vascular. The transverse folds or bands of the inner membrane of the cystic duct seemed to be elongated, and to project beyond what is natural, so that a probe could not be made to pass either upwards or downwards.

The hepatic and common ducts were pervious and unobstructed.\* In the duodenum a circular patch about three inches in diameter, of which the orifice of the duct was the centre, was highly vascular. The fluid in this small intestine was not tinged with bile; it was very abundant, and detached portions of yellow mucus, resembling that secreted in the nostril, floated in it. The stomach was much contracted, and on its internal surface there was in various parts the appearance of increased vascularity. The small intestines also were very much contracted, in one part to a very remarkable degree. The other abdominal viscera presented no unusual appearance. The thorax was not examined. This is another decisive instance wherein jaundice caused by strong mental emotion, terminated in a violent and fatal affection of the brain.

I learned from Dr. Colles the circumstances of a similar case which fell under his observation. A young gentleman having a chancre on the glans penis went to his house to consult him. He directed for him alterative doses of calo-

\* The cystic duct presents externally a convoluted form; occasioned probably by the irregular transverse bands or folds which are situated upon its internal membrane. As those transverse bands may project more in some cases than in others, I am not absolutely certain that the appearance described is a morbid one. It is well, however, to mention it, because a more accurate and close inspection of the ducts of the liver in cases of jaundice, may throw light in many instances upon its cause. This convoluted form and valvular condition of the inner membrane is peculiar to the cystic duct. It is beautifully exhibited in the gall-bladder of a lion which was shown me by Mr. Shekleton, Demonstrator of Anatomy at the College of Surgeons. These bands or folds often impede materially the progress of gall-stones.

mel, which were persevered in for about four or five weeks. The mercury seemed to agree well; no untoward symptom appeared, and the ulcer was completely healed. About three weeks afterwards this young man was observed to be deeply jaundiced, and having continued two or three days in this state he was seized suddenly with delirium, followed by repeated convulsions. These symptoms having continued for a few days, Dr. C. was sent for, and found his patient dying; the symptoms indicating evidently a most violent affection of the brain. Every viscus in the body was most accurately examined, and not a trace of disease could be discovered. The external and internal parts were much tinged with bile.

Many such like cases have no doubt been observed by various practitioners. Few, however, have recorded those which they have witnessed. There are to be found in Morgagni's work some interesting observations on this form of disease; and, as they bear directly and forcibly upon the subject of this paper, I shall briefly quote the leading facts, leaving it to the reader to turn to the work itself, where the cases and dissections are fully related.

A young priest, soon after perturbation of mind, was seized with jaundice, pain in the epigastrium, vomiting; the stools colourless; after a few days he was restless, stupid, and forgetful; then delirious, and convulsed. He gnawed everything with his teeth, struggled violently, and vomited dark matter. The blood rushed impetuously from an opening made in a vein; the serum gave to linen rags a yellow tinge; the convulsions ceased, he lay motionless and comatose, and died on the fifth day.

A young man was much terrified—the day after was icteric; delirium, and the most violent convulsions came on; he died in twenty hours from the commencement of the delirium. The same author speaks further of a person in jaundice, at first without febrile symptoms, afterwards affected with fever, delirium, tossing of the body, epileptic paroxysms. Three days before death convulsions came on, after which he died tranquilly. The liver, and all the parts of the body, internal as well as external, were tinged of a yellow colour to a very great degree.

Again, a lively good-natured young man became morose and depressed, and was affected suddenly with jaundice; and after the lapse of fifteen days he began unexpectedly to gnash with his teeth, and after violent convulsions and howlings, died. The dissection of the bodies of these persons exhibited no morbid appearances sufficient to account in any measure for the jaundice, delirium, convulsions, and death. This same writer justly remarks in another place: “*Nec tamen refertis cerebrum ne tum quidem neque cum immanes convulsiones fuerint, magnopere læsum appareat. Fugere enim oculos potest id quod in illo erat delirii causa: irritatis autem vel extra cerebrum nervis, aut, quod in Sacerdote illo ex dissectione conjiciendum est, spinali medullâ, horribiles possunt convulsiones existere.*” *Morgagni de sedibus et causis morborum.* Epist. xxxvii. 6.

In observing upon these cases of icterus, it may be said that the affection of the brain was an accidental circumstance, unconnected with the original disease, and arising from causes quite distinct from the presence or absence of bile in the circulating system. That jaundice is not the



only, or even the principal cause, is very certain, for we often observe patients to be deeply jaundiced, and yet free from cerebral disorder. But that under certain circumstances, in certain conditions of the nervous system, phrensy may be excited, either by the bile conveyed to the brain or in consequence of the sympathy which exists between the cerebral and hepatic systems, is an assertion, the truth of which, I conceive, the facts stated sufficiently establish. In practice it is important we should be aware that an icteric patient who has a weak and irritable nervous system, must be closely looked after, lest alarming symptoms should unexpectedly arise; and in cases of this kind we should be very guarded and cautious in our prognosis.

The close connexion which exists between the liver and the brain, is not only exemplified in disease, being propagated from the former to the latter, but also is strikingly illustrated by the opposite fact—viz, that morbid action going forward in the brain often implicates the liver; and causes either derangement of its functions, or active inflammation. Yellowness of the eye and skin is sometimes the immediate consequence of a blow injuring the brain. A violent mental emotion produces a similar effect. Thus jaundice is the result of causes, altogether dissimilar in themselves, but curiously alike in the effects they produce. By both the brain is violently affected; the injury in both instances is propagated to a distant organ. A person bitten by a viper soon presents a jaundiced appearance. The poison appears to act injuriously on the nervous system; the derangement of the biliary function seems to be an effect arising from the mischief done to the

brain and nerves. It is not uncommon to find abscesses in the livers of those who have died from injuries of the head. In a large proportion of hydrocephalic cases the liver is diseased as well as the brain: in these cases, however, the hepatic affection is usually the primary one. This connexion between those two important organs must be steadily held in view by those who would treat that formidable disease with judgment: and it will often happen that the early cure of the hepatic disorder will prevent the occurrence of hydrocephalus, even after the first symptoms of the disease have manifested themselves. In affections of the brain, the occurrence of a jaundice indicates the rapid approach of dissolution. This fact, to which my attention was first directed by Mr. Crampton, the Surgeon-General, is strikingly illustrated in the following case, which, independently of its connexion with the subject we are engaged in, seems to me one of peculiar interest, and well worthy of being recorded.

Mr. ——— had attained his 36th year, was dark-complexioned, muscular, and well formed. In his earlier years he indulged in habits of dissipation and intemperance. His mind was generally on the stretch, his aim to compass many things at once, and he was seldom free from anxious and busy thoughts. For the four last years of his life, his periods of dissipation were shortened, and his time was spent chiefly in the country. He was subject habitually to headaches. Pain in the head was the uniform consequence of every excess in drinking. He was bilious, nervous, and very irritable: a hurt or accident was followed by sudden paleness and faintness. To remove syphilitic symptoms

he had been frequently under the influence of mercury. Latterly his mind became unusually anxious and uneasy, as if something were preying upon it.

On the 23rd of April he fell on his side from a scaffold about eight feet in height; he was slightly stunned, but apparently not injured. A few minutes after, he became faint, and was obliged to lie down. In the course of the evening, the observation fell from him that his head was confused, and that he could not well attend to business. His headaches were now more frequent. He was observed often to apply his hand to his head, as one who felt some uneasiness there.

On Friday, May 2nd, the tenth day after the accident, he complained of slight rigors and general indisposition.

On Sunday he dined with a friend in town; drank moderately, rose early next morning, and, with a view to the removal of a slight headache, took some Cheltenham salts, which operated freely. He rode out to the country, ate a hearty breakfast, and was, whilst in the act of mounting his horse, seized suddenly with violent pain in his head, darting through both temples, and from the occiput to the sacrum. He remained the rest of the day in bed, and could not shake off the pain.

On Tuesday there was an entire remission of pain: late in the evening it returned, and harassed him all night. On Wednesday also the remission was complete; and in the evening he was again in great pain. On this day he was well purged; his tongue was chalky white; his urine somewhat high-coloured; no sleep.

Thursday: Pain, though diminished in intensity, was

unremitting; pulse not accelerated; no constitutional excitement. Leeches were numerously applied; blood flowed freely from the orifices; he was easily and abundantly purged; no relief ensued; night restless and sleepless.

Friday, May 9th: I saw him this day at four o'clock for the first time since the commencement of his illness. He felt, he said, relieved by leeches, many of which had been in the morning applied. The pain was in his temples and forehead. He appeared much agitated; was impatient when questioned; complained chiefly of an entire deprivation of sleep; sighed occasionally, and moaned often. Pulse natural; skin cool; bowels quite free; abdomen soft; tongue very white and moist. At eight o'clock in the evening, the pain became gradually so intense, that he entreated to be bled. His pulse had now risen in strength and frequency; he remained not a moment in the same posture, and seemed to suffer much. A vein was opened, and blood was allowed to flow till he grew faintish; he experienced considerable relief. Having lain quietly for about an hour, he left his bed suddenly, sat at the fire, and immediately fainted. The exertion of returning to bed reëstablished the pain; he was restless and uneasy: he took twenty drops of laudanum, became still more restless, and at length slept for two hours. He awoke suddenly, complaining of much pain: there was an unusual degree of wildness in his countenance and manner. Pulse full and hard, not frequent; skin hot. He was again bled; and scarcely were eight ounces removed, when symptoms of syncope supervened. He was materially relieved, and lay quietly, but without sleep, till morning.

Saturday, 10th : Symptoms very alarming ; pain intense, seated in the forehead, temples, and at both sides of the head, increased by the least exertion, even by the effort of speaking. When unexpectedly addressed, or touched with any cold substance, he was thrown into a state of great agitation : he complained of intolerable pain ; could not breathe freely ; a sort of convulsive struggle or catch affected the respiratory organs ; his sighs were deep and frequent ; pulse full, and hard, and 92 in a minute ; tongue loaded with a thick white secretion. Under these circumstances, bleeding was again resorted to. Twenty ounces were quickly removed ; there was but a slight tendency to syncope ; the symptoms were materially mitigated, but by no means subdued. At ten at night he was nearly in the same state as in the morning. In his extreme restlessness, he removed the bandage from his arm, and bled copiously. The relief was instantaneous. He passed a quiet though sleepless night. Ice was applied to his forehead, and every fourth hour a cup of the following mixture given :—℞ Aq. ferv. ℥xii., Crys. tart. ℥i., Ant. tart. gr. i., Sac. albi ℥ss. M.

Sunday : He appeared much better ; pain considerably abated. There was an evening exacerbation, but its severity was checked by the application of ice.

Monday : Still apparently much better : pain confined to one temple, and not severe : alvine discharges fluid, dark coloured, and copious : urine high coloured. At midnight there was considerable pain in both temples, accompanied with much agitation and restlessness. Sixteen leeches were applied, and brought with them so much relief, that he himself thought the disease was quite re-

moved : heaviness and numbness in the head were now the only sensations complained of. He did not enjoy any sleep.

Tuesday : Unceasing loquacity, peevishness, and irritability of temper formed the most striking features of the disease on this day. At night his intellect was, for the first time, affected ; he spoke incoherently. In the morning he said he had been dreaming all night, and that his dreams had seemed realities. One small dose of medicine purged him largely.

Wednesday : Pain severe in the right temple ; much sighing ; agitation ; great debility. Ten leeches were applied : he was rendered faint by the loss of blood ; but the pain was entirely removed. After the application of the leeches the following symptoms were observed : muttering, and incoherent speaking ; grinding of the teeth ; incapability of motion ; weak voice ; questions answered slowly and with difficulty ; eye heavy ; inattention to surrounding objects ; memory evidently impaired. At the beginning of the night he appeared roused, and so far recovered as to be able for a while to converse : soon, however, he began to speak incoherently. When questioned about his feelings and disease, he answered quite rationally ; at intervals he snored loudly. His tongue grew clean ; his skin was cool, and pulse natural.

Thursday : Stupor, incapability of moving the body, grinding of the teeth, frequent yawning, unwillingness to speak : he was more collected and rational ; fingers moved slowly and constantly over the forehead. When asked to show his tongue, he continued for a long time to protrude and retract it : his countenance was remarkably changed,

it assumed a deeply yellow tinge. - Night spent without sleep, without change of posture, in a continued stupor, with loud snoring.

Friday: He took food with pleasure. The upper half of his body was covered with profuse perspiration; its smell peculiar and heavy. Much stupor and insensibility. At half-past three, after the administration and full operation of a purgative enema, he was seized with convulsions.

Upon recovery from them his sighs were deep, the intervals of inspiration more and more lengthened; his extremities felt cold: his pulse was indistinct, and by degrees imperceptible; and at half past-four he expired.

In the commencement of the disease the agony he endured was only to be relieved by general bloodletting: the blood did not exhibit any of the usual marks of inflammation. From first to last there was not the least irritability of the stomach: the mixture, containing emetic tartar, purged, but did not nauseate. The application of ice was attended with decided advantage; it afforded so much relief, that the patient used himself to call for it. On Saturday a blister was applied to the back of the neck. On Sunday the head was shaved; and at night a large blister placed on the back. His head was also blistered; and on Wednesday night blisters were applied to the calves of his legs. The remedies did much to mitigate pain and alleviate distressing symptoms, but nothing to remove the disease: its irremediable nature dissection sufficiently evinced.

*Dissection performed twenty-four hours after death.*—On raising the dura mater, a thin layer of coagulated blood, deposited between the arachnoid membrane and pia mater,



extended on each side over a considerable space of the anterior lobes of the brain. A similar appearance was observed at the superior and posterior parts of the brain, under the parietal bones, and reaching downward to the occipital. Blood was likewise effused between the same membranes at the base of the cranium, and over the surface of the cerebellum; a layer of blood was also deposited between the convolutions in every part of the brain. The lateral ventricles with their cornua, the third and fourth ventricles, were entirely filled with one large, continuous clot of dark blood: connected with this, another, as large as a walnut, occupied the inferior part of the left anterior lobe, into which a ruptured vessel, capable of admitting a small injecting pipe, opened. The quantity of coagulated blood in the interior of the brain amounted to several ounces: we were allowed to examine only the head. The dissection was performed by the Surgeon-General in the presence of Dr. Crampton, Mr. Macnamara, and myself.

There is a form of jaundice which appears in hysterical women, and owes its origin most frequently to some commotion and disturbance of the mind. In the cases of this disease which I have witnessed, mental emotion always gave rise to it. The symptoms in the first instance would lead one to imagine that the patient laboured under a violent attack of the bilious colic, or that a gall-stone was impacted in the ducts. It is necessary carefully to distinguish this affection from the bilious colic, inasmuch as the treatment suited to each form of disease is extremely different. Since, however, it only attacks persons who have been subject to fits of hysteria, and is accompanied

with great depression of spirits, the diagnosis is not very difficult. Of this disease Sydenham, in his "Treatise de Colicâ Biliosâ," An. 1670-71-72, p. 186, has given a very just delineation. He describes it as "attacking women of a lax and gross habit of body, and such as have laboured under an hysteric affection, or such as have had their strength exhausted by difficult parturition. A pain not less severe than that of the iliac passion is felt at the region of the stomach, or somewhat lower, which is succeeded by copious vomitings of matter, sometimes green, sometimes yellow. To these symptoms are added a depression of mind, and despair, exceeding that in any other disease. After a day or two the pain subsides, but returns with unabated violence in a few weeks. It is accompanied sometimes with a remarkable jaundice, which, after a few days, spontaneously vanishes. The least commotion of the mind, whether it be anger or fear (to which such women are very subject) brings back the pain." He says afterwards that, in this form of hysteria, the bilious colic is most accurately simulated. In the cases of this complaint which I have seen, serious mischief was done by mistaking the attack, in one instance for colic, in another for gall-stones. Where hysteria is at all suspected, the urine should regularly be observed: its limpid and copious secretion will often at once detect the real nature of the affection, and prevent all the injury resulting from needlessly active and vigorous treatment. The hysteric colic and jaundice are easily subdued. A few leeches, fomentations, moderate purgation, followed by opiates and tepid baths, will relieve the urgent symptoms; and in the cases which have fallen

under my observation, change of scene, regular and wholesome diet, exercise on horseback, and mild aperients, have prevented their return. In these cases the subsiding of the pain was always accompanied with extrication and discharge of flatus, either upward or downward. It is singular enough that Heberden, so accurate an observer, should deny that there is such a disease as jaundice connected with hysteria, and blame Sydenham for having supposed its existence. By him the symptoms are referred to gall-stones—indeed, in what he has written on the subject, he seems hardly to contemplate any other cause of icterus.

I shall now quit this part of my subject, and go on to that which relates to the connexion subsisting between a jaundiced appearance of the skin and a morbid condition of the mucous surface of the bowels. In this form of disease, as well as in that already treated of, dissection leaves us either wholly ignorant, or much in doubt, as to the proximate cause of jaundice. Future observations may remove this difficulty; and we may yet know with certainty what it is that gives rise to icterus, when it appears either after injuries of the brain and emotions of the mind; or when it is connected with excitement and inflammation in the internal membrane of the bowels. Disease in the mucous surface of the stomach and small intestines is constantly overlooked. Its symptoms are often obscure; and it may, I doubt not, exist to a formidable extent, and yet leave no appearance, after death, indicative of its presence. A recent inflammation on the external skin seldom retains in the dead body any evidence of its existence. Of this I lately saw a striking proof—a man who had ulcers in

his lungs, was seized two days before death with erysipelalous inflammation, affecting the face and scalp; the countenance was red, much swollen, and disfigured: within the space of a few hours after death, the colour had entirely forsaken the surface, and no trace of the inflammation, which had raged almost to the last moment of existence, was left behind. So it is with a morbid condition of the internal skin or membrane of the intestines; nor is it peculiar to those parts to be affected with disease, without leaving behind any perceptible change of structure;—the same happens in other organs. In this paper more instances than one have been brought forward, in which the brain was violently affected; and yet the most accurate investigation could discover nothing to account for the symptoms. If, therefore, we wish to avoid error, we must not hastily conclude, that disease has not existed, because the scalpel has failed to disclose any morbid appearance. When disease, affecting the mucous surfaces, is complicated with jaundice, this last symptom is so prominent and glaring, that the other less obvious affection is usually disregarded. In like manner, it often happens that a patient is treated for general dropsy, and the obscure disease of the heart which has caused it, is overlooked. By repeated observations we shall be enabled to fix clearly in the mind, what the symptoms are which indicate disease in the mucous membrane of the stomach and small intestines. It is an affection, which, like every other, has its peculiar and distinctive characters; and by carefully attending to these, the existence, and often the precise situation of the morbid action, may be satisfactorily

ascertained. This, however, is a subject, which needs to be still further investigated; and our knowledge here, as as well as in many other departments of medical science, will increase in proportion to the accuracy with which we observe symptoms before death and appearances after; provided we can see the one and the other with an unprejudiced eye. The usual cause of that form of jaundice, the consideration of which will occupy the remaining pages of this paper, is the ingurgitation of cold fluids into the stomach, when the body is much heated; or sudden and reiterated exposure of the person after severe exercise to cold. In all such cases, the disease is not confined to the liver and its ducts; but the mucous surfaces of some part, or all the intestinal canal, are involved in the same morbid action. It is even probable, that, in these surfaces, disease first establishes itself, for the patient is usually ailing for many days before jaundice appears; and the symptoms of which he complains are amongst the number of those which indicate commencing disordered action in some part of the villous coat of the bowels. The first case I shall relate is one of jaundice terminating in dysentery:—

—— Bracken, labourer, æt. 55, was a strong muscular man. About a fortnight before I saw him, in consequence of unusually severe labour, he had been thrown into a profuse perspiration. Whilst in this state he drank large and repeated draughts of cold milk. The next day, and during several days, he felt himself cold, chilly, and so weak that he could no longer work as usual. Presently he was observed to be much jaundiced; his strength forsook

him, his appetite was gone, and his thirst not to be quenched.

I saw him on the 24th of July, and took the following note of the symptoms:—Occasional syncope; prostration of strength; deprivation of sleep; dimness of vision; vertigo; depression of spirits; frequent and deep sighs; palpitation; dyspnœa without cough; constriction at epigastrium, and intoleranee of pressure; nausea caused by cold fluids; complete anorexia; unquenchable thirst; tongue moist, white in the middle, florid at the edges; skin and eye of a lemon-colour; disposition to clammy perspiration; urine without sediment, colouring a linen rag yellow; fæces white; pulse 60, soft and full. Frequent and full evacuations from Epsom salts dissolved in a large proportion of water, followed by a purgative enema, produced a considerable abatement of the symptoms.

On the 29th of July, being much pained by pressure at the region of the stomach, sixteen leeches were applied, also mercurial frietion (unguent. hydrar.  $\mathfrak{z}\text{i}$ . singulis diebus) and sulph. mag. ex. inf. ros. were directed. After the leeches were removed, the bleeding was promoted by warm fomentations: he experienced very great relief, and felt (according to his own expression) light-hearted and comfortable. On August 1st, he complained of an appetite so craving, that scarcely any quantity of food was sufficient to remove the sensation. He had not, he said, ever before felt so keen a desire for food: the thirst was abated; skin less deeply coloured; margin of tongue intensely florid, centre white and loaded; urine very bilious; skin moist; distressing debility.

2nd : Appetite still craving ; vertigo ; dimness of vision ; sleeplessness ; heat of fauces ; mercurial, or costiveness ; slow pulse. An ounce of inf. sen. with ten grains of the elect. scammon. repeated a few times, at intervals of three hours, opened the bowels fully.

4th : He informed me that he had felt, these few evenings past, a pain in the temples and forehead, which came on gradually at the close of the day, continued during the early part of the night, and subsided towards morning. He was much better ; his stools were darker coloured.

6th : Occasional rigors ; white fæces ; pain at epigastrium ; thirst ; total loss of appetite ; periodic pain of temples and forehead ; tongue coated and very red ; ill taste ; slow pulse. I learned accidentally that medicine (the nature of which I could not ascertain) had been privately administered by a friend, who had undertaken to cure him. Blood was taken from his arm ; leeches were applied ; the bowels were opened : by these means all pain was removed from the head and epigastrium ; the tongue, however, became dry and brown in the centre, and was still highly florid at the margin ; the pulse was weak, and there was much languor and debility. He felt, he said, as one intoxicated. There was a diminution in the quantity of urine, as also some pain in the lower belly, which was removed by an enema and warm fomentations. *Haust. anod. singulis noctibus. bal. tep.*

12th : Stools destitute of bile ; eyes and skin deeply tinged ; appetite extinguished ; thirst urgent ; great distress from flatulency ; sleep produced by the anodyne draught ; much relief and comfort from the tepid baths.



Sept. 3rd: Stools still clay-coloured; they were now tinged with blood, became very frequent, and were accompanied with pain and tenesmus: the abdomen was not in any part painful when pressed; flatulency increased; eyes and skin still deeply tinged; scarce any appetite; much thirst; weak pulse; prostration of strength. Leeches to the lower belly, succeeded by warm fomentations, and afterwards a blistering plaster, with repeated doses of the Dover's powder, afforded considerable relief;—his diet restricted to wheaten flour and rice, boiled in milk. The dysenteric symptoms having disappeared, he continued for several days in an apparently improving state; when rather suddenly, towards the end of the month of September, dysentery returned with extreme violence; the stools were very frequent, fœtid, dark-coloured, and full of coagulated blood: the jaundice was unabated. His sufferings, from the frequency of the stools and the violence of the tenesmus were extreme; the bed-coverings and his lower extremities were all smeared with blood. In this state of suffering he lingered for many days, and on the 8th of October, at three in the afternoon, expired.\*

The following morning, at nine o'clock, the examination of the body took place. The body was very much emaciated: a deeply yellow tinge pervaded the whole surface. The peritoneum in every part was coloured with bile: in its cavity there was a deposition of yellow fluid, in which

\* This patient contrived frequently to evade taking his medicines. Mention is here made of such medicines only as it is pretty certain he did take.

flakes of lymph floated; the liver was shrunk, and retracted considerably within the margin of the ribs; the stomach was distended, and presented externally a very vascular appearance. The peritoneal coat of the large and small intestines was in extensive patches, vascular, opaque, and thickened. The vessels of the mesentery crowded together, and dilated. The cardiac portion of the internal surface of the stomach presented no unusual appearance; on approaching the pyloric extremity, the inner membrane was highly vascular, and a large patch was quite black. On laying open the duodenum, its surface presented a still more vascular appearance. This vascularity was extended along the whole tract of the small intestines, and was particularly evident upon the surface of the valvulæ conniventes. The contents of the small intestines were everywhere mixed with bile. The ilium, near the caput coli, presented a highly inflamed appearance, and its contents were of a chocolate colour. The whole internal surface of the caput coli was deeply ulcerated and covered with purulent matter: its coats were thickened: this gut was full of black, foul, and rather solid faeces, mixed with clots of pure blood. The colon and rectum were ulcerated and thickened in numerous patches throughout their whole extent. Wherever the ulcerations were most extensive, there the contained matter was most solid, foul and black; clots of black blood were everywhere mixed with the contents of the large intestines. The liver was diminished in size; fleshy excrescences grew from its convex surface; to the touch it was remarkably flabby and inelastic; its vessels very much dilated; its colour at every section intensely

yellow. The gall-bladder contained several ounces of dark green bile; its duct at the superior part was contracted to a very small size. The remaining portion of the cystic duct was considerably dilated; as were the hepatic and common ducts, which were unobstructed. Wherever the liver was cut, green bile flowed from the enlarged ramifications of hepatic ducts. The spleen was shrivelled, and possessed less tenacity than the crassamentum of healthy blood. The kidneys were flaccid and small, and all their vessels dilated. The viscera of the thorax were carefully examined, and did not present the least morbid appearance. The dura mater was yellow; some (but very little) fluid in the ventricles; the brain remarkably firm and healthy. Of the contents of the cranium the dura mater alone was discoloured.

Drawings were taken on the spot, exhibiting accurately the appearance of the mucous surface of the stomach, quodenum, ilium, and caput coli. These appearances, combined with the symptoms during the progress of the disease, leave no room to doubt that the morbid action was not confined to the liver and its ducts, but was propagated along the whole mucous membrane, from the pyloric extremity of the stomach to the termination of the rectum. The symptoms during life, which particularly indicated this state of the intestinal canal, were the deeply florid tongue; the unquenchable thirst; the epigastric tenderness; the state of the appetite, which was either wholly extinguished, or morbidly craving; the great prostration of strength; the rapid emaciation; and lastly, the dysentery. The canine appetite is a symptom which claims

attention. I have met with frequent instances of it. Of the diabetes mellitus it forms a prominent feature, and is often present in cases of deranged digestion. A man died not long since in hospital, who was kicked by a horse upon the region of the stomach: frequently afterwards he vomited blood. He was reduced to the utmost state of emaciation; he was deadly pale; his skin harsh and dry; his pulse frequent, small and feeble; his tongue intensely florid, clean and glazed; a thirst, which could not be quenched, combined with an internal feeling of burning heat, harassed him continually; he had incessant vomiting, and was occasionally delirious. This man, a few days before his death, had a most craving and ravenous appetite, and ate greedily of broiled mutton, which was the only aliment that remained upon his stomach. Towards the conclusion of his illness he had cough, dyspnoea, and purulent expectoration. In Braeken's case it is not easy to say what may have been the immediate cause of the jaundice. Inflammation in the mucous membrane of the duodenum will not account for this symptom. I have seen this membrane not only inflamed, but extensively ulcerated, without the least bilious tinge on any part of the body; nor was there, in this instance, anything in the condition of the liver to which its origin could be traced. The most probable explanation is, that the inner membrane of the ducts was inflamed, and thrown thereby into a state of spasmodic contraction. In inflammation of the mucous membrane of the intestines, or in an inflamed state of the liver, jaundice will probably not be present, unless the ducts likewise partake in the diseased action. In either

case, so long as the ducts are exempt from disease, the descent of the bile is unimpeded, and that fluid is not absorbed; but when these are in a state of excitement or inflammation, the natural stimulus of the bile, instead of producing in them the moderate contraction necessary to propel the fluid, causes so great a degree of contraction as altogether to hinder the descent of the bile into the duodenum, and thus gives rise to jaundice. This part of the subject is so well illustrated by the following case and dissection, extracted from Dr. John Hunter's *Treatise on Army Diseases*, p. 197, that I shall insert the whole of it.

“In the body of a person who died of pulmonary consumption, I had lately occasion to observe some things not altogether foreign to the present subject. A few days before death, to the common symptoms of the disease, was superadded a jaundice. The lungs were found diseased in the usual manner; there were adhesions to the pleura, tubercles, indurations, and suppurations in their substance. In the abdomen there were marks of superficial inflammation all over the liver; and the lower surface of it was united to the stomach by adhesions. The gall-bladder was full, but no bile could be squeezed out of it. On laying the ductus communis open from the duodenum, it was found filled with bile of a brown colour, and of a thick ropy consistence, as were also the ductus hepatici. Part of the ductus cysticus was laid open, and the gall-bladder was pressed with considerable force, but still no bile flowed. Through a blow-pipe, introduced into the duct, the air at last with some difficulty was forced into the gall-bladder; after which, by pressing again, a coagulum of bile was

squeezed out, and what followed was ropy and black, like molasses. On laying the duct open all the way to the bladder there appeared no other obstruction of the bile than the coagulum; which, as well as the thick and ropy state of that secretion, appear rather to have been the effects of stagnation, than a cause of obstruction in the first instance. *Did the inflammation in the neighbourhood of the ducts, and perhaps extending to them, excite such contractions in them as obstructed the bile*, in the same way that a suppression of urine is sometimes a consequence of inflammation in the urinary passages?"

If the opinion be correct, that this form of jaundice (I mean that arising from cold applied to the heated body) is generally, or perhaps uniformly, complicated with an highly excited and sometimes inflamed state of the mucous membrane of the bowels, it must follow of necessity, that the plan of cure should be directed, not so much to the condition of the liver as to that of the neighbouring viscera. In all cases of what may be termed recent or inflammatory jaundice, in which, combined with the other symptoms, there is tenderness and fulness at the epigastrium, the treatment should be primarily and essentially antiphlogistic: bleeding, general and local; saline purgatives largely diluted; general and local tepid baths, should uniformly precede the use of mercury. I have seen cases of this kind, wherein the mercurial treatment had aggravated every symptom, yield at once to a bleeding from the arm, followed by the application of a few leeches. This I have observed, even where the pulse was not accelerated.

Ulcerations are much more frequently found in the large

than in the small intestines. May not this be caused by the irritation of the foul matter lodged in the colon and rectum, when their internal membrane is inflamed? That either scybala, or offensive fæces, lodged in those parts are a *cause* of dysentery, I do not mean at all to assert. But when, from other causes, inflammation has once set in, I think it very probable, that there is here a source of additional irritation, which will account, at least in part, for the greater rapidity with which the large intestines run into ulceration. The difference in colour, smell and consistence, between the matter at the termination of the ilium, and that at the commencement of the colon, where the valve alone intervenes, is very remarkable. In Bracken, the ilium at its termination was highly inflamed, but not ulcerated; whilst the whole caput coli was one mass of ulceration. The contents of the ilium were soft and without smell; those in the caput coli comparatively solid, and highly offensive. Hence the value, in practice, of restricting the dysenteric patient to such nutriment as shall deposit in the large intestines the least possible portion of fæces.

I shall briefly relate a case or two more of this form of jaundice: — McGuinness, æt. 30, labourer, admitted into hospital on the 31st August. This man was in a condition of extreme poverty; his diet had consisted very much in salt fish. Several weeks previously to the date of his admission, having been obliged to work laboriously and almost unremittingly the greater part of a summer's day, he drank large and repeated draughts of cold water. On the following day he was universally jaundiced: he also felt pain and heat at the epigastrium, and towards the right



hypochondria, with much thirst. Afterwards he discharged blood, both by vomiting and stool, and presently purple petechiæ began to appear on several parts of his skin. A few days after his admission the following note was taken of his case.

The upper half of his body is thickly strewed with blackish spots, distinctly circumscribed, about an eighth of an inch in diameter. Similar spots are scattered upon the lips, tongue, and fauces. There is a small superficial, unhealthy ulcer at each internal angle of the mouth. The gums are ulcerated and bleeding; pulse 104, small and weak; urine scanty, turbid and offensive. The skin and countenance sallow and bloodless, but not bilious. The right lobe of the liver may be distinctly traced, descending about two or three inches below the margin of the ribs. He is free from cough and dyspnœa. He complains of thirst, which annoys him chiefly during the night; he has scarcely any appetite; is languid and weak; has a dry and husky skin, with considerable œdema of the lower extremities. By improved diet, small doses of sulph. magn. ex infus. ros. and water, slightly acidulated with vitriolic acid, a gradual subsiding of every morbid symptom was produced. The petechiæ disappeared; the ulcers in the mouth and gums were healed; the thirst ceased; the urine became natural; and his health, strength, and appetite were amended. Afterwards minute doses of the blue pill, with a succession of small blisters to the right hypochondrium, brought about a diminution of the size of the liver; and he was discharged from the hospital with his general health very much improved. When I first saw this man, the symp-

toms bore an accurate resemblance to those which characterize the sea scurvy. In him the immediate exciting cause of the jaundice was cold applied to the inner surface of the stomach, when the body was much heated. This fact, the passing of blood upward and downward, the local pain, the internal heat, the thirst, the peculiar colour of the skin, and the purple spots, lead me to think that the inner membrane of the stomach, and probably some part of the small intestines, were involved in the morbid condition of the liver and its ducts.

Among the symptoms indicative of disease in the chylipoietic viscera, I am disposed to include the petechial spots. In several cases which I have lately witnessed,—cases in which no morbid appearance could be discovered, except in the mucous membrane of the intestines,—besides the ordinary symptoms, such as redness of the tongue, intense thirst, epigastric tenderness, internal heat, rapid emaciation, dry skin, oppressive debility, nausea and vomiting, there appeared, toward the conclusion of the disease, sometimes large blue or livid patches upon the skin,\* and in many instances purple petechiæ. This appearance has so frequently occurred, in connexion with the symptoms just stated, that I have latterly been inclined to adopt the opinion, that it is symptomatic of a morbid condition of the villous coat of the bowels. Whether the petechiæ of fever may or may not be referred to this source, I shall not now inquire; but shall proceed to state a few cases, in

\* This appearance is observed in the severest forms of the yellow fever.

which these spots and patches on the skin appeared in a remarkable manner.

I attended a young woman some months since, the upper half of whose body was covered with large blue patches, so that her appearance was most extraordinary.\* Her disease

\* This ease of the purpura hæmorrhagica was one of peculiar interest. The appearance of the skin and face was so remarkable, that I had a drawing taken of it. In this patient the tongue was clean, smooth, and of a bright red colour: towards the termination of the disease, this brightness of colour gradually faded away. Before her death there was infiltration into the cellular membrane, and into all the cavities. She died comatose. Perhaps there is not any symptom more characteristic of this affection than the loss of muscular energy—the overwhelming debility—which in severer cases accompanies it: even in the mildest cases it is attended with much languor and depression of spirits. During the whole course of this girl's illness (which lasted four months) she complained of little else than extreme debility. Epigastric pain and fulness suggested the application of a few leeches: the bleeding could scarcely be restrained; she was, however, relieved by it. It is safer, in this disease, to remove blood by the lancet than by leeches. I am indebted to Mr. Cusaek, Surgeon to Steevens' Hospital, for an opportunity of observing a very interesting case of purpura. The patient is a strong, and apparently healthy woman. Small petechiæ and large purple patches appeared suddenly whilst she lay in bed, and were ushered in by a troublesome itching of the skin. The symptoms are, præcordial oppression, anorexia, thirst, and debility. A large tumour (evidently caused by flatus) existed for some time in the left hypochondrium. Profuse and frequent nasal hæmorrhages ceased altogether after a bleeding from the arm. In the *Edinburgh Medical and Surgical Journal* for Jan. 1819, Dr. Parry of Bath relates two cases of purpura cured by venesection. Dr. Bateman, in his synopsis of Cutaneous Diseases, 2nd Edit., p. 109, mentions a case of purpura simplex in a feeble woman, of which the symptoms disappeared after a severe catamenial flooding. With this agrees the experience of those in this city with whom I have

was caused by sudden and extreme alternations of heat and cold. On dissection I found the spleen greatly enlarged, and gorged with black blood, the mucous membrane of the stomach and small intestines overspread with extensive spots of ecchymosis, great dilatation of the vessels of the mesentery, and enlargement of its glands. These were the only morbid appearances. A boy was sent to me affected with frequent fainting fits, and loss of voluntary power in the lower extremities, the surface of whose left limb was painful when touched, and discoloured with large yellow and blackish patches, as if he had been beaten and bruised. This boy was emaciated; continually picking at his nose; he was very pale; had a florid tongue; much thirst, and drank cold fluids eagerly. His skin was harsh and dry, his sleep disturbed and uneasy, accompanied with a grinding of the teeth; his appetite capricious; his bowels were described to be regular. Before I saw him he had ineffectually used hartshorn drops, and warm baths. I di-

conversed, who have had most frequent opportunities of treating this disease. In fever I have repeatedly observed the petechial spots to disappear after blood had been taken from the arm, and leeches applied to the head or epigastrium. This I have likewise seen after the full operation of an active purgative. In some instances these remedies change the colour of the spots from a purple or livid, to a lighter and more florid hue. In the cure of purpura, the remedies to be relied on are, bloodletting at an early stage, and purgatives and opium during every stage of the complaint. Afterwards much benefit will result from change of air, light tonics, with the vegetable and mineral acids sufficiently diluted. Judging from the symptoms, the warm bath I should conceive a good remedy: of its utility I cannot speak from experience.

rected for him three grains of scammony, and the eighth of a grain of calomel, rubbed together with sugar, to be taken every third hour. The powders operated fully, the stools were very offensive; and a large lumbricus was voided. A few hours after the full operation of the medicine the blue patches disappeared, and the boy's health was gradually and completely reëstablished. I lately saw an interesting case of a young woman, who was at the period of menstruation, greatly terrified by a robber suddenly entering the room in which she lay. Months of ill-health had elapsed before I saw her. Her strength was prostrate; she was deadly pale, and very much emaciated: there was much pain and fullness at the epigastrium; the bowels were costive; the urine scanty; the skin always dry; the pulse quick and feeble. There was also oppression at the cardiac region; palpitation, and a total want of refreshing sleep. She continued many weeks in this state; at length dysentery came on, attended with much pain on pressure throughout every part of the abdomen: the stools were very frequent, painful, and accompanied with tenesmus; latterly they consisted of little else than blood. A few days before her death the upper half of her body was strewed with large petechial spots, which, on her face but not elsewhere, were somewhat elevated above the level of the skin. The morbid appearances, as related to me, were adhesions between the pericardium and surface of the heart, and also between the pleura and left lung; an universally inflamed appearance of the peritoneum, with effusion of a puriform fluid into its cavity; the whole mucous membrane of the small and large intestines loaded with blood, and of a chocolate

colour. These are a few, amongst many cases of this kind, which I have witnessed. Whether the petechial spots, and the diseased action in the chylopoietic viscera, are to be considered as connected together in the relation of cause and effect, or as merely coexistent, and unconnected the one with the other, future observations alone can determine.\*

To the cases of jaundice, arising from the application of cold to the heated body, which have been already related, I shall add one more, that of a young unmarried woman, who, at the time I saw her, had been ten weeks affected with jaundice. During that space of time the catamenia had not appeared. Her occupation subjected her to sudden exposure to cold when much heated. Upon one occasion, whilst perspiring profusely, she drank largely of cold water. Soon afterwards she felt a sensation of burning heat at the region of the stomach, for which she sought relief in large draughts of the coldest fluids. This sensation was accompanied with thirst, vomiting, also with pain on pressure, and a feeling of constriction at the epigastrium. When I saw her these symptoms were much increased; she complained also of

\* Since writing the above, I have met with some remarks on this disease by Dr. Harty of this city. The symptoms of the cases related by him, combined with the excellent effects resulting from a purgative plan of treatment, support the opinion that the seat of the disease is in the *primæ viæ*. He mentions a case, the symptoms of which appeared immediately after an attack of cholera. Hence he was induced to make trial of cathartic remedies. The liberal exhibition of calomel and jalap was productive of the most salutary effects. Dr. Harty's observations on this disease deserve an attentive perusal. They are to be found in the 34th number of the *Edinburgh Medical and Surgical Journal*.

want of sleep, palpitation, slight dyspnœa, and excessive debility. Her flesh was wasted; her skin very dry; there was not, since the commencement of her illness, the least tendency to perspiration; the urine thick, turbid, and loaded with bilious matter; the fæces were lumpy, ash-coloured, and untinged with bile. No food except flummery remained on her stomach. The pulse frequent, soft, and regular. The edge of the liver could be traced with tolerable distinctness considerably below the margin of the ribs; she was very deeply jaundiced. From the application of ten leeches to the region of the stomach, she experienced great relief. Half a grain of opium at bedtime always procured for her tranquil sleep. Large quantities of lumpy fæces were carried off by injections of warm water and castor-oil. She took every night five grains of the pil. hyd., and effervescing draughts were given in the course of the day. Her only nourishment was flummery. Wine whey was directed for her. She became, however, gradually more and more debilitated: and after lingering for several days with scarcely any variation in the symptoms, she at length died suddenly whilst making an effort to vomit. The cause, the symptoms, and the progress of the disease in this female, resemble so accurately, in every essential feature, those of the cases already related, that an identity of morbid action may reasonably be inferred. I have to regret that the body was not examined. The symptoms, however, induce me to look upon the case as a good specimen of the form of jaundice which I have been attempting to describe; a form in which, as I conceive, the liver and the secreting



surfaces of the stomach and small intestines are simultaneously involved in morbid action. Nor is it in such cases only that this complication of disease takes place; we shall find that it also belongs to many other affections of the abdominal viscera:—to the cholera morbus, for example; a disease which prevails chiefly during the autumnal season, when the alternations of heat and cold are sudden and frequent, and which does also occasionally arise from drinking cold liquors, when the body is heated by labour or exercise. It owes its origin less frequently than is imagined to the nature of the food taken into the stomach. Vomiting, thirst, internal heat, are amongst its prominent symptoms; there are also griping pains and frequent stools, which indicate the presence of morbid action in the mucous coat of the large intestines. In many, who have died of cholera morbus, the marks of inflammation in the villous coat of the bowels have been unequivocal, so much so that they are not distinguishable from the effects of the corrosive poison. In this disease, the functions of the liver are so much deranged, that all the symptoms have been traced by the older writers to the irritating effects of a redundant secretion of acrid bile. That the hepatic functions are greatly deranged, is certain; but that the symptoms are caused by the action of the bile upon the mucous surfaces, is now I believe acknowledged to be an erroneous opinion.\* In treating cholera morbus, the supposition that bile is the cause of

\* See Dr. Johnson's Treatise on Derangements of the Liver, Internal Organs, and Nervous System, page 49. In this work, as well as in a former one, entitled the "Influence of Tropical Climates on European Constitutions," correct views of the pathology of the cholera morbus

all the mischief, has led to the adoption of remedies ill calculated to check the progress of this formidable malady. The patients have been deluged with diluting drinks, and even emetics and cathartics have not been withheld. When it is considered that there is a cold stage antecedent to that of reaction and excitement, and that the vomiting and purging exist for hours before bile appears in the matter ejected, it must be evident that there is an highly excited state of the mucous surfaces, wholly independent of the biliary secretion. The cause of the cholera morbus, the symptoms, and the appearances after death, evince that the disordered action affects both the intestinal mucous surfaces and the liver.

In dysentery the disease is often confined to the large intestines; more frequently the small are likewise involved. It is not uncommon to find the liver in those who have died of dysentery extensively diseased.

Typhus fever is more frequently complicated with a jaundice in southern latitudes, than in this our colder climate. The few cases of it which are to be observed in this country, occur generally during the autumn months. I am informed by Dr. Cheyne, that in several cases of the typhus icterodes which he has seen, large discharges of blood by stool took place. Hence it seems probable, that when jaundice accompanies a continued fever, the abdominal mucous surfaces will be found in either an excited or inflamed condition.

The bilious remittent fever of warm climates is another have been put forward. The profession is, I believe, very much indebted to the author of these works for the correction of various errors respecting the nature and treatment of this disease.

form of disease, which appears to me to belong to the subject under consideration. If the leading symptoms of this affection be carefully reviewed, and these again compared with the appearances exhibited on dissection,† it will be evident that this malady ought to be classed amongst those in which the force of the attack falls principally upon the inner tunie of the stomach and duodenum. This (there is now little doubt) is the most constant seat of the disease. And when we consider how abundantly these surfaces are supplied with nerves and blood vessels, how essential to life are their functions, and how widely extended their sympathies, it will cease to be a matter of surprise, that disease invading these organs should give rise to symptoms the most formidable, and should even destroy at once the vital principle. As most diseases derive their names from some prominent symptom, so in this instance the jaundiced appearance of the skin has obtained for it the appellation of the yellow fever. This yellowness of the surface, which proves that the biliary system has likewise suffered from disease, is a very constant, but not by any means a necessary symptom. The warmer the climate is, the more certainly this symptom is present. In countries or districts where there is much heat during the day, where there are also heavy and noxious vapours by night, these fevers always rage. In colder climates they seldom appear, except during the autumnal months, when the heat of the day promotes perspiration, and the coldness of the night

† See Dr. Bancroft's Essay on the Yellow Fever, pages 20, 21, 22, particularly his observations on the symptom called the Black Vomit, page 23.—See also Observations on the Diseases of the Army in Jamaica, by Dr. John Hunter, pages 196, 201, &c.

chills the surface.\* It would appear, then, that very similar causes give rise to the cholera, the desentery, to intermittent, remittent, and bilious fevers. These affections also resemble each other in many of their leading symptoms, and are most probably but modifications of the same disease:—in all of them, the villous coat of some part of the intestinal canal is the principal seat of morbid action.

There is yet one form of disease of very frequent occurrence, the seat of which is in the villous coat of the stomach and small intestines. That to which I allude is the “Infantile Remittent Fever,” or as it is vulgarly termed, the “Worm Fever,” of children. This disease is essentially the same as the bilious fever, or the more mild bilious disorder of adult age, but modified by the time of life and other circumstances. Its characteristic symptoms, if closely analyzed, will be found all of them to point to the mucous surface as the original seat of morbid action. Irritation at the extremity of this membrane, as at the nose, lips, eye-lids, or verge of the anus, is a very constant symptom: the state of the skin, urine, appetite, and bowels, the defect of nutrition, with other symptoms, all lead to the same conclusion. In almost every instance of the disease the symptoms do likewise afford evidence of

\* It is remarkable that the chilling of the body in a cold, dry climate, gives rise to acute diseases; such as inflammations of the pleura, pericardium, peritoncum and synovial membranes; whereas in climates where the heat during the day excites perspiration, and marshy exhalations chill the surface, bilious remittents, intermittents, dysentery, and cholera morbus prevail. Can it be that in the first sort of climate the serous membranes are prone to inflammation, and in the second, the mucous?

disorder or disease in the hepatic system. The tendency of affections of these membranes to assume an intermittent or remittent type is a very curious circumstance, and one of which no satisfactory explanation has as yet been proposed. Inflammation of the conjunctiva of the eye and lids possesses occasionally a distinctly remittent character. The symptoms of an intermittent are now and again produced by irritation in the urinary passages. Affections of the mucous membranes often run a very protracted course, and yet leave behind no material change of structure.

In the "bilious disorder," or, as it might more properly be termed, the "gastro-hepatic disorder," so frequent in these countries, the derangement of function is not restricted to the liver: it takes a wider range; and includes, within the sphere of morbid action, those important viscera which are situated near that gland, and from whence the nutritive particles which supply the whole body proceed. By a modern writer of great eminence this complaint (which assumes so great a variety of forms) has been named "the disorder of the chylopoietic viscera:" the name implies the existence of derangement of function in those surfaces where the food is converted into chyle, and thus far the name carries with it a just conception of the nature of the complaint. It corresponds also with the extent to which our knowledge at present reaches; for until we shall be further informed on the subject, and learn to distinguish by the symptoms the precise part or parts of the chylopoietic viscera affected with disease, we must be content to retain a name which is not very limited and precise in its import.

Such are the considerations, which the form of jaundice here treated of has suggested. The number of diseases, whose seat is in the liver and mucous membrane of the stomach and small intestines, is very great. Of these diseases some are mild and easy of treatment, some exhibit symptoms of a more formidable nature ; and others run a course so rapid, as too frequently to baffle the best directed efforts of the healing art.

## LECTURE X.

### ON THE TREATMENT OF THE DIABETES MELLITUS.

SINCE the publication of Doctor Rollo's Treatise on the Diabetes Mellitus, this disease has been investigated with more than ordinary attention ; and, though no absolutely curative plan of treatment has as yet been discovered, still considerable progress has been made, and the disease has lost somewhat of its hopeless and intractable character. Much was expected from Dr. Rollo's mode of treatment by animal diet ; the efficacy of which was, at first, scarcely doubted. However, like other remedies which have, for a time, been high in public estimation, it has lost much of the character it had acquired ; and will be found, I fear, greatly to disappoint the expectations of those who are disposed to place much reliance upon its virtues. An exclusively animal diet may, no doubt, and often does, alter considerably the sensible properties of the urine, and materially diminish its quantity ; but even with the few who can endure, and will submit to such a restriction, it will be found to effect but little towards the removal of the disease. A partial adoption of this regimen will, however, be useful, and much merit is undoubtedly due to Dr. Rollo, not only for his discovery respecting the change produced in the saccharine urine, by a total abstinence from vegetable



matter; but also for the valuable light which his labours have thrown upon the nature and treatment of this terrible malady.

Amongst the remedies hitherto employed, opium, in very large doses, ranks highest; it possesses the property of checking and restraining the flow of urine, and depriving it of many of its morbid qualities. Its effects, however, are of a transient nature; when the medicine is withdrawn, the complaint recurs; it may again and again check its progress, but the tendency of the disease towards a fatal conclusion will not, I apprehend, be ultimately prevented. A permanent cure of the diabetes mellitus has rarely been accomplished.

A perfectly successful mode of treatment yet remains to be discovered. Every step which is made towards the attainment of this desirable object, is in itself valuable, and may also lead to still further advances; till, at length, we may become possessed of the ability to rescue a considerable proportion of those who are affected with the disease, from a lingering and miserable death.

A well-marked case of the diabetes was, not long since, placed under my care. From the wish to afford all possible relief, I anxiously referred to every source whence useful information might probably be derived, and was thereby led to an attentive perusal of the several treatises and detached cases of this disease, which have, from time to time, appeared. In the works of the older writers, little, if any valuable matter respecting the treatment will be found; indeed, until the period at which Dr. Willis made the curious discovery of the existence of sugar in diabetic

urine, all the recorded histories of this complaint are marked by vagueness and uncertainty ; and are as applicable to any form of diuresis, as to that in which the urine is saccharine. While employed in turning over the several works written on this subject, my attention was particularly arrested by the following important considerations : First, in many of the cases whose histories are recorded, the earliest disturbance in the general health could distinctly be traced to some cause acting upon the skin, and producing derangement of its functions. Secondly, *every* case of the diabetes mellitus is accompanied with a peculiarly morbid condition of the skin. In truth, I know not any disease in which this symptom is so uniform and so remarkable. Thirdly, none of the remedies employed produced the slightest beneficial effect, until the skin began to relax, and a sweat to appear on the surface.\*

These considerations led me to turn my attention more

\* See two cases of Diabetes treated by opium. *Transactions of the London College of Physicians*, vol. iv. In case I. it is stated, p. 198, that the " opium produced considerable perspiration, and on the following morning the urine was no longer sweet. The patient had felt great relief from languor since the opium had been resumed." In Case II. p. 208, it is observed that, " during the period in which the dose of opium had amounted to ten grains (taken four times in the day) the patient had perspired profusely, had been sleepy and giddy, but had suffered no other inconvenience ; the urine had a natural appearance and odour, and yielded a very considerable extract." A case is recorded by Dr. Darwin, in which opium produced salutary effects, at a time when it caused the patient so to sweat, " that large drops stood on his face, and all over him." Another case is mentioned by the same author, in which a course of astringent and tonic medicines did not in the least benefit the patient. Opium was at length given ; it excited profuse perspiration, and great relief ensued. Emetics have been useful, so far as they have been effectual in determining to the surface. The Hepatized Ammonia has also had the effect of promoting perspiration. Autimonials, when effectual in exciting diaphoresis, have likewise been

particularly to the state of the skin, and suggested the probability of advantage arising from the application of *vapour* to the whole surface of the body. The vapour bath was employed. The impression made upon the disease by the frequent use of this remedy surpassed my expectations. Its salutary effects, in giving a new action to the skin, were immediately perceptible. The perspiration having been afterwards maintained by warm clothing, and continued bodily exercise, the patient daily improved in health ; and at length quitted the hospital, under the conviction of his disease being wholly removed. Before entering upon the particulars of this case, I shall briefly state two observations obtained, the one from Dr. Rollo's book, the other from a treatise written by Dr. Latham. These observations appear to me peculiarly important ; as, in both instances, the only operative remedies were those which established upon the surface an abundant perspiration. In the first, the effect was produced by the tepid bath ; in the second, by bodily labour. To these facts an additional value should also be attached, because, unworped by any theory, they are simply and as it were accidentally stated.

In the second edition of Rollo on Diabetes, p. 183, there is a communication from Dr. Gerrard of Liverpool. In the case given by Dr. G., the first observable symptom was a diminution of habitual perspiration ; afterwards it totally ceased ; and at length "the cuticle became unnaturally dry, harsh, and rough, and to all appearance dead, and in-

found useful. Blood-letting and the warm-bath are valuable remedies, and their utility will be found proportionate to the power they possess of re-establishing the functions of the skin. See Watt on Diabetes pages 27, 28, 29, 36, 38, 151, 152, 155.

capable of perspiration, absorption, or any kind of transmission." With this state of the skin was connected the ordinary symptoms; thirst, increased appetite, languor, debility, and saccharine diuresis.

In the sole view of determining, by experiment, the existence or non-existence of cutaneous absorption, this patient was immersed, every successive or alternate day, in water raised to a pretty high temperature; the weight of his body having been carefully ascertained, both before and after each immersion. An attempt was made to restrict him to animal diet: medicine of every kind was intentionally withheld. The warm bath was first used on the 12th of February. On the 22nd, there was a considerable diminution of the quantity of urine; its smell was urinous, and the extract less sweet; the weight of the body was increased, and it was observed, the dead cuticle began to come off.

24th. On this day he used the bath at the temperature 100°, and remained in it fourteen minutes.

25th. "The dead cuticle is peeling off; and he is obviously improving in every respect, and gaining weight." Bath continued at the same temperature, and employed every day till the 20th of March.

For several days, at the beginning of March, he lost ground, in consequence (as I conceive) of considerable disorder in the stomach and bowels. During the continuance of this derangement in the functions of the abdominal viscera, the cuticle did not come away as before, nor did the patient sweat. On the 21st of March, the non-existence of cutaneous absorption having been satisfactorily proved, the warm bath was laid aside.

28th. "He has had a considerable and general perspiration last night ; his thirst and appetite are moderate, and he is quite free from pain." At this time the disorder of the bowels appeared to subside ; the functions of the skin became more natural ; and he began evidently to gain ground.

April 7th. He used the warm bath to cleanse his skin, when a large quantity of the dead cuticle came off. Cold bath ordered.

8th. Urine four pounds thirteen ounces ; it is not sensibly sweet. He felt very warm and comfortable after the cold bath, and rested well at night ; his appetite and thirst are moderate. He was now a second time thrown back by disorder in the digestive organs ; but soon afterwards he began again to improve.

29th. Urine three pounds three ounces. "He had a copious perspiration in the night, which continued about four hours."

May 1st. "He perspired much in the night, but it does not weaken him."

6th. On this day it was discovered that the patient did not adhere to the plan of animal diet longer than the first fourteen days. During the remaining (as is distinctly stated by the author himself) "he partook, with the other patients, in the common mixed diet of the house."

17th. "Urine four pounds ten ounces ; it is neither sweet, nor in any over proportion to the fluids taken in : nor will it ferment, although he has lived chiefly on vegetable matter and milk, since the 6th instant. He has had copious perspirations these two nights past."

25th. "He was discharged from the Infirmary, to all appearance cured of the disease ; which, to his own thinking, has long been the case ; and to the opinion of his being *even cured*, I have no hesitation in subscribing."

This case, the details of which are in Dr. Rollo's book, possesses peculiar value. Medicine was not administered ; nor was animal diet, except during the first fourteen days, adhered to ;\* and yet there is here presented to us as perfect an instance of recovery as any on record. To what then is the cure of this patient to be ascribed ? Not certainly to a few days adherence to animal diet ; for it was nearly three months after the exclusively animal regimen had been laid aside (and at a time too, when the diet was chiefly vegetable) that the most marked and decided amendment of the symptoms was manifested. Since, therefore, no medicine was given, and little, if any effect, can justly be attributed to the short restriction to animal diet, it obviously follows that the warm bath (which was not used as a remedy, nor was its efficacy in the least suspected) was, in reality, the one and only efficient means of cure. This opinion is likewise corroborated by the fact, that, in the

\* It is scarcely credible to what a degree an exclusively animal regimen is loathed by the diabetic patient. Dr. Gerrard in the narrative of the case referred to in the text, whilst expressing his disappointment at being deceived by his patient, speaks of the "irresistible propensity to more or less of vegetable diet, as one of the characteristic symptoms of the disease." (P. 223). So prone are such patients to practise deception in this matter, that the adoption of the animal regimen, during even fourteen days, seems to me more than questionable. My patient deceived even those in the ward with him ; and devoured, in secret, the skins of potatoes, and every vegetable substance he could lay hands on. The loathing of animal food is so very constant a symptom, that there arises from this circumstance alone an insuperable obstacle to the cure of the disease by animal diet.

same proportion as the morbid cuticle was detached, and abundant perspiration established, so did all the symptoms of the disease subside. The second observation derived from Dr. Latham's book, I shall quote in his own words :—\*

“The first case I remember to have seen, was in the Radcliffe Infirmary at Oxford, under the care of the late Dr. Parsons, then Clinical Lecturer in the University; the impression of its being an incurable disease, which the medical pupils received from the Professor, was sufficiently fixed in their minds by the inefficacy of the remedies which were from time to time prescribed for the patient's relief; worn out with expectation, and despairing at last of receiving any benefit, he was, at his own desire, put upon the list of out-patients, and requested to come occasionally to the Infirmary, that the pupils might have the opportunity of seeing the progress of the disease, rather than with any expectation of a prosperous issue to the complaint: a few weeks elapsed before he returned to us, and to the great astonishment of all we found him improved, not only in his appearance, but also very materially in the urinary discharges. His own account was, that, weary of life, and destitute of every ray of hope, he had wandered about, as well as his strength would allow him, for a few days amongst his fellow-labourers of the neighbourhood, and finding, from this exertion, that his strength did not decrease, he was tempted to take a part in the work that was going forwards; that a copious perspiration very soon ensued, under which he did not feel himself weakened in

\* See Latham on Diabetes, p. 130.



bodily powers, but rather improved in spirits ; that he renewed the same sort of easy occupation from day to day, with the same comfortable event ; and that at last not only his spirits but his bodily strength was manifestly increased ; his urine, however, was then neither perfectly natural in smell or taste or quantity, although in all these respects it was certainly much amended. He visited the Infirmary a few times afterwards at irregular intervals, and at last ceasing to attend, we concluded, from the progress made towards recovery, whilst he continued his attendance, that he probably had been fortunate in experiencing a cure. And had we been then as convinced of the efficacy of animal food in diabetes as we now are, we should probably have thought that the provincial diet of that district might possibly have contributed to his relief, for the poorer sort of labourers usually lived upon a large onion with fat bacon, and no great portion of bread." I fancy the reader will be disposed rather to attribute the amendment in the state of this patient's health, to the free perspiration caused by bodily labour, than to the large onion, or even the fat bacon.

I shall now proceed to relate the principal facts of the case of the diabetes mellitus, which I have lately had under my care ; and which strongly illustrates the value of those remedies, by which a copious and continued diaphoresis is most certainly produced.

— Riddal, æt. 20, a shoemaker ; hair and eyes dark ; conjunctiva clear and pearly ; lines of the muscles distinctly marked ; complexion sallow ; emaciation extreme ; veins prominent and full ; skin a dingy yellow, permanently arid,

and glued apparently to the subjacent muscles ; gums ulcerated ; a small unhealthy ulcer on the right cheek ; epigastrium tumid ; tongue florid at margin and point, and covered in other parts with a thin whitish secretion ; extreme listlessness, languor, and debility ; a sensation of weakness (referred to the knees) so great, that it is with difficulty the weight of the body is supported ; dimness of vision ; sleep broken and disturbed ; he is much distressed during the night by spasms in the lower extremities ; though constantly placed before a large fire, a sensation of creeping coldness is always present. Appetite inordinate ; thirst unquenchable ; mouth clammy ; digestion rapidly performed ; a craving sensation recurs soon after food has been taken ; costiveness ; there is a constant desire to pass water, which is increased during the night. From twenty to twenty-two pounds of urine are passed ordinarily during the twenty-four hours ; the bubbles remain on its surface : it is limpid and almost colourless ; its smell peculiar, and not easily to be described ; its taste very sweet ; when evaporated there remains an abundant extract resembling coarse brown sugar ; pulse 88, full and throbbing ; neither cough nor dyspnoea ; such were the symptoms which manifested themselves at the time of his admission into hospital, which was towards the end of the month of December.

I obtained from him the following account of the state of his health, previously to the time of his admission : In the beginning of last November, he embarked at Liverpool in a vessel destined for Dublin. He was then in perfect health ; a violent storm came on ; the loss of the vessel was hourly expected. He was four days at sea, and during

the greater part of that time was to his knees in water ; he was chilled with cold ; and for the last two days there was not any supply of provisions. After quitting the vessel, he felt himself constantly chilly, and could not by any means (to use his own expression) "get warmth into him." A thirst so intense came on, that he was perpetually swallowing large draughts of water ; he preferred cold drinks. In describing the symptoms, he dwelt a good deal upon an unusual dryness of the skin, and a total absence of perspiration, since the time of his sea voyage ; his sight also grew dim ; his bowels were costive. In consequence of the excessive keenness of his appetite, his complaints became a subject of ridicule ; languor and debility, notwithstanding the large supplies of food, daily increased ; and at length he found himself so weak, that he was obliged to abandon his ordinary occupation, and make the best of his way to town to seek relief.

On the first of February, ten ounces of blood were removed by the lancet ; the serum was milky ; the crassamentum firm ; the loss of blood did not in any manner affect the symptoms. From this time, on to the 2nd of March, mercury was used, externally and internally, in large quantities ; no fœtor of the breath, no increased secretion of saliva, nor any other symptom indicating the presence of mercury in the system, was perceptible. Only whilst using that medicine, he evidently lost ground and became, by degrees, so very weak, that he was no longer able to leave his bed. His bowels were regularly evacuated by doses of castor oil and tincture of senna. His diet was chiefly vegetable ; his ordinary drink the inf. lin. and water.

On the 2nd of March the vapour bath was used for the first time. No very perceptible effect was produced. This remedy was repeated on the 9th, 12th, 16th, and 26th. The symptoms still unabated : there was, perhaps, some slight accession of strength.

From the 2nd to the 27th of April, all treatment, except daily purgation, was laid aside. The flow of sweet, and almost colourless urine, in the course of the day and night, often exceeded twenty-four pounds. The necessity of assuaging his thirst, and voiding his urine, was so continual during the night, that he could scarcely obtain any sleep. He was now reduced to a state of alarming debility. On the 27th of April, he was again placed in the vapour-bath ; half an ounce of the tincture of opium was mixed with the water which was to be converted into vapour. He remained in the vapour-bath twenty minutes. On being replaced in bed, syncope came on, from which he recovered very slowly ; he then became feverish and hot ; at length the skin gave way, and the whole surface of the body was soon covered with sweat. He felt, he said, immediately relieved ; and on the following day was much better.

On the 4th of May, he was again put into the vapour-bath, to which the tincture of opium, as before, was added. There was not, on this occasion, any tendency to faintness : it excited copious perspiration, and he had a sound and refreshing sleep.

On the 10th of May, the following note was taken of his case: Strength improves daily ; he feels much less languid ; skin soft and perspiring ; pulse 88 ; a whitish secretion covers the tongue ; appetite less craving ; improved sleep ;

he grows fat; gums continue ulcerated and sore ; and the ulcer on the inferior maxilla is still open.

May 18th. The urine, almost colourless and very sweet, amounted during the preceding day and night, to full twenty-four pounds. His thirst was very urgent. His weight on this day was seven stone ten pounds.

May 22nd. A temporary diarrhoea, with griping pain, was produced by repeated doses of the colocynth pill. The urine, during the increased action of the bowels, was observed to assume an amber colour, and to acquire a urinous odour, to be much diminished in quantity, and to have a taste less sweet. The tongue was cleaner ; the faeces yeasty ; the mouth parched ; no perspiration ; skin very itchy.

May 30. Urine, though more amber-coloured, amounts to twenty-one pounds ; pulse 100 ; no perspiration ; an exclusively animal diet, with lime-water and milk, had been for some time enjoined : the patient, however, devoured in secret whatever of vegetable food he could procure ; he said that much meat at a time lay heavy on his stomach, and greatly oppressed him.

June 3rd. A remarkable change in the symptoms was observed ; for the last twenty-four hours the urine did not exceed eight pounds ; during the preceding day and night perspiration flowed generally and profusely ; there was a great accession of strength, and diminution of thirst and appetite. The abundant and continued sweating was produced by laborious exercise, while the body was enveloped in thick flannel, and the weather unusually warm. The first efforts at bodily labour were difficult and reluctant.

The patient in the morning, when commencing the work of the day, could hardly move his spade ; he was, however, prevailed on to persevere : by-and-bye he began to work with more ease to himself ; and before the close of the day, when perspiration was fully established, the labour was easy and the fatigue trifling. From this period to the beginning of July, medicine of every kind was abandoned. He worked very hard every day ; was warmly clad, and sweated much. His food was principally vegetable ; he daily gathered strength and weight ; enjoyed sound undisturbed sleep, and felt himself so far relieved, that he was resolved to return immediately to his home and former occupation. From the slightly saccharine taste of the urine and the continued ulceration of his gums, I strongly urged that he should not yet remove himself from medical superintendence.

July 27th. Bowels costive ; urine sweet, light-coloured, and moderate in quantity ; tongue much cleaner ; free perspiration ; he rose but once during the night ; thirst, though much abated, continues ; weight eight stone thirteen pounds. For several days past he had ceased to work ; the vapour-bath has not been used, nor any medicine given ; a perspiring state of the skin, however, has continued.

August 4th. He has been for some days restricted to a diet exclusively animal ; he has adhered strictly (as far as I could learn) to the regimen prescribed ; his ordinary drink was milk with lime-water and beef-tea ; the weather was very warm, and the patient's body entirely enveloped in thick flannel. An itchy, slightly-elevated, pale-red eruption was thickly and universally diffused over the

## DIABETES MELLITUS.

surface of the body. His pulse beat steadily 120 strokes in a minute, and was throbbing and full.

August 10th. Pulse still 120. Diet consists in eggs, beef, mutton, soup, and milk. The serum of blood taken yesterday from his arm was white, like milk; sixteen ounces of blood were at that time removed; his strength, by this evacuation, was not in any degree impaired; the pulse fell to 104; perspiration continues; urine, within the last twenty-four hours, has amounted to eight pounds; the taste not sweet; the colour a deep amber; sleep natural. This day he complains of thirst, which has not been the case for several days past.

On the 12th of August, after a meal of fat meat, he was seized with severe vomiting and retching, and spent a feverish and restless night. On the following day, the pulse throbbed strongly, and rose to 120; he loathed food of every kind, had intense headache, panted for breath, and seemed like one suffocating. Fourteen ounces of blood were removed; the appearance of the serum was altogether altered; it was now perfectly transparent, and had a slightly greenish tinge; those urgent febrile symptoms he attributes to the animal regimen, from which he had not for some days deviated. He said that fat or rich meat particularly disagreed with him. Urine slightly saccharine; much more deeply coloured, and considerably less abundant; skin thickly covered with an eruption of the same nature as that already described. The dyspnœa was so urgent that it gave to his countenance an expression of wildness. He was very restless, and continually changed his position. His skin was intensely hot.



The flannel dress was laid aside, and he lay uncovered, except by a single sheet. His thirst was not to be appeased, and his appetite was wholly extinguished ; the epigastrium was tumid and painful. By pressure at that region of the abdomen, the dyspnoea and suffocative sensation were very much augmented. Leeches were frequently and numerously applied at the epigastrium ; the bowels maintained in a lax state by the daily exhibition of purgatives, saline draughts repeatedly administered, and opium, in large doses, given at night. After each application of the leeches, the respiration became freer and easier. In a few days, the febrile symptoms subsided, and left him weak, languid, and emaciated. The rapidity, however, with which he regained health, and strength after the cessation of febrile action, was remarkable : his skin continued soft and moist, but not profusely perspiring ; his pulse did not rise beyond eighty in a minute ; his sleep was undisturbed ; his appetite moderate ; and there did not remain any inordinate thirst. The quantity of urine varied from six to eight pounds, during the day and night ; it was rather light-coloured ; the taste salt and slightly sweet ; he weighed eight stone four pounds. Under these circumstances, towards the end of the month of September, he quitted the hospital. I saw him on the first of January, 1822. There was not any return of the symptoms ; the skin retained its natural and softened feel ; he weighed eight stone five pounds ; his pulse was moderate ; the expression of his countenance very much improved ; though not exempt from thirst, it gave him no annoyance ; his tongue was whitish ; he felt strong, and alive to every en-

joyment ; he worked at his trade as a shoemaker, from an early hour in the morning, with little intermission, until late at night ; his diet consisted of bread, butter, occasionally meat, fish, potatoes, and gruel ; the gums were very slightly ulcerated ; the bowels, without medicine, were daily evacuated ; the general quantity of urine, in the course of a day and night, varied from six to seven pounds ; taste salt, slightly saccharine ; colour still paler than natural.

Such are the leading facts which belong to this case. I regret that the specific gravity of the urine was not at any time ascertained, and that this fluid was not, during the progress of the disease, subjected to chemical analysis. Attention to these points would have rendered the history of the case much more complete. Such as it is, however, it exhibits, in a striking point of view, the powerful effects of copious perspiration, produced by the vapour-bath and muscular exertion, in controlling and restraining the symptoms of the diabetes. That many have attempted the cure of this disease, by diaphoretic remedies, I am well aware ; but the attempt has been made rather through the medium of medicines taken into the stomach, than by means of remedies designed to act directly upon the skin. That internal remedies should have failed is not surprising, when we consider that the constitution of a person labouring under this affection will resist the action of the most powerful medicines, even when exhibited in the largest doses. It is singular to what an extent opium, antimony, and other drugs may be administered, and yet little or no effect be produced. The warm-bath has been used—but it has been used only

occasionally; it has been employed as a secondary remedy, as one of minor importance, and not as one, which, if properly managed, is of itself sufficient to effect a cure. Its daily employment for weeks, nay months, may be requisite to bring about that relaxed and freely perspiring state of the skin, without which, whatever temporary abatement in the symptoms, or diminution in the flow of urine, may have taken place, not one step has, in reality, been made towards the accomplishment of a cure.

In the case just related, the cessation of accustomed perspiration, and the perpetual chillness, were symptoms which strongly indicated the necessity of remedies capable of recalling the suppressed and interrupted functions of the skin. The patient had enjoyed perfect health until the period of his long exposure to wet and cold. His habits of life had always been temperate; there was nothing, except the circumstances of his voyage, which could in any manner account for the disease.\* It ought likewise to be noticed that, *previously* to the perception of any other symptom, the coldness of the surface and dryness of the skin existed. These symptoms did not at any time disappear

\* The same cause in different individuals, according to their several predispositions, produces very different effects. I had under my care in the hospital a man who sailed in the same vessel, and was exposed to the same causes of disease as Riddal. He, in like manner, for some time afterwards, felt cold and chilly, but the disease with which he was attacked was an intermittent fever. It is remarkable that this man's ague, though it had resisted bark given in the very largest doses, yielded easily to a moderate course of mercury, aided by opium and antimonial wine. In addition to these remedies the Pediluvium was used every night, and free perspiration established. It may be worthy of remark that this person had been, nineteen years before, affected with the same disease, at a period when intermittent fever prevailed very generally at Drogheda and in its vicinity.

until, after the repeated use of the vapour-bath, the functions of the skin were beginning to be restored ; from the moment the pores were opened, the sensation of chillness ceased. How far the tincture of opium may have conduced to the efficacy of the remedy, it is not easy to determine. Once, after the opiated vapour-bath, the patient's sleep was much more heavy and protracted than usual. Such an effect might have been produced by the opium ascending with the vapour ; this, however, is by no means certain. To establish the value of opium thus externally applied, numerous observations are necessary. Having once succeeded in bringing out a moisture upon the surface, it yet remains—a task of no small difficulty and importance—to maintain a permanently relaxed and moistened condition of the skin. To attain this desirable object, exercise and warm clothing, as remedies, claim peculiar attention. Rid-dal had not been working in the garden two days when the urinary secretion was diminished to one-third of its ordinary quantity ; this change was accompanied with a corresponding mitigation of every other morbid symptom. With patients in the better ranks of life this remedy (which I conceive to be one of high importance) is practicable at every season of the year. Active exercise on horseback will excite perspiration, without producing fatigue.\* To this remedy the patient will, at first, be extremely averse ;

\* It is important that the convalescent from the diabetes should not suffer even a single day to elapse without engaging in such exercise as shall determine powerfully to the skin. The advantages of exercise may be obtained in a variety of ways, such as in walking, dancing, fencing, &c. The patient who is fond of riding may procure that enjoyment in a riding-school or other similar enclosure, even during the severest weather.

he will himself, however, soon discover its value, and be inclined to persevere in its use. It will require a very considerable effort to overcome the inertness and languor which hang over the diabetic patient. If, however, the remedy be so managed as to determine powerfully to the surface, it will be accompanied by a degree of vigour and exhilaration sufficient to insure its being for the future persevered in ; not so with blood-letting, opium, emetics, animal diet, and other remedies usually resorted to. The proposed plan of exciting diaphoresis by means of muscular action, is well calculated, not only to check the progress of the disease, but also to obviate the liability to a relapse. This is a matter of no small importance ; for it rarely happens that a fully-formed diabetes (I mean that in which the urine is decidedly saccharine) is radically and permanently cured.

This case shows, that a temporary diarrhœa diminishes the quantity and alters the quality of the urine. I have at present under treatment in the hospital a man named Hughes, labouring under the diabetes, for whom the following purgative was directed :—*R. Pil. colocyn. gr. xii. ; Ol. croton. guttas ii. M. Fnt. pilulæ sex ; sumatur una tertiâ q.q. horâ, donec alvus soluta sit.* This poor man, concluding that he could not take too much of a good thing, swallowed the whole at once : he was largely purged, but not nanseated ; for several days afterwards his bowels remained tender and painful. So long as the diarrhœa continued, the urine was scanty and high-coloured ; hence it would appear that, in the treatment of the diabetes, daily purgation should not be omitted. Sufficient diaphoresis once established, the bowels will easily yield to mild pur-

gative medicines. From this case we also learn, that the sweating treatment ought not to be pushed too far, lest cutaneous eruption, troublesome and difficult of cure, should ensue. In Riddal's case, the exclusively animal food produced a high and dangerous fever—no uncommon consequence of such a regimen. In several of the recorded cases a similar effect was produced. In a young woman, named Galbraith, treated for the diabetes at the Whitworth Hospital by my friend Dr. Cuming, and now under my care, fever was twice caused by the animal diet. We may, I believe, with certainty conclude, that a full indulgence in animal food, while at the same time the body is not exercised, must end in the production either of some febrile disease or of local inflammation. I cannot therefore but object strongly to that mode of treatment, which would enjoin upon the patient at once a strict adherence to the animal regimen, and abstinence from exercise and bodily labour. I know not any disease in which a carefully regulated diet is of more importance than in the diabetes. The appetite is morbidly keen; its full gratification will certainly overload the stomach, and create much distress. Fulness at the epigastrium is a very frequent symptom, as also a sensation of heat and spasmodic constriction and tightness about the region of the stomach, these feelings are always increased after a full meal. In looking over the notes of several cases of this disease treated by Dr. Crampton,\* I

\* Whilst providing materials for clinical observations on the case of Riddal, who was then in hospital, Dr. Crampton kindly furnished me with notes of several valuable cases, which fell under his observation and treatment, both in hospital and private practice. In almost all of them, there was fulness about the epigastrium or uneasiness on pressure. In all, without exception, the skin is described to have been dry,

find that in one instance, blood was vomited. In the "Dictionnaire des Sciences Médicales," an account is given of the dissection of a diabetic subject, performed by MM. Dupuytren and Thenard, amongst other morbid appearances, we find the following :—"l'estomac était extrêmement volumineux (cinq à six pintes de capacité) ; les vaisseaux de cet organe, très-dilatés, formaient, à la surface interne, un réseau très-rouge et plus développé que de coutume. Le duodénum, le commencement du jéjunum, et le cœcum étaient un peu plus rouges et un peu plus épais que dans l'état naturel." The fulness and tenderness about the epigastrium, as well as the appearances in this almost solitary instance of dissection, would lead us to avoid every stimulating article of diet, and restrict the diabetic patient to moderate allowances of such food as is most easy of digestion. In Galbraith's case, the diet consists of bread, a small allowance of meat, and a larger proportion of well-boiled rice. This diet agrees well. Her common drink is the carbonated lime-water; which, she says, appeases her thirst more effectually than any fluid she has ever taken. This patient has been much benefited by the frequent application of leeches at the region of the stomach. She has now laboured under the disease upwards of four years. An exclusively animal diet obtained, in her case, a full and fair trial. Under its use the urine was rendered less abundant, and more deeply coloured ; she did not, however, notwithstanding, anserine, or scaly. In several, cold and wet were the immediately exciting causes of the disease. Emetics, bleedings, purgatives, warm baths, and the hepatized ammonia, were the remedies principally employed. In all, the progress towards a cure kept pace accurately with the effects produced by these remedies in restoring the functions of the skin.



standing the diminished secretion of the kidneys, gain weight, or recover her strength and spirits. Her thirst was intense ; she loathed animal food. To her opium also was administered in large and repeated doses ; no sweat was produced ; the relief resulting from it was slight and temporary. The vapour-bath, frequently repeated, has caused heat of surface, and an aggravation of the symptoms, and has altogether failed to excite perspiration. After repeated efforts, a perspiration has at length been produced.

This was effected in the following way : For the purpose of softening the dry and thickened cuticle, the whole surface of the body was rubbed over with oil;\* the patient was then put into a warm bath, and the body washed with soap until the oil was completely removed. After this process had been three or four times repeated, a copious and general perspiration was excited. In the view of maintaining the cutaneous discharge, the Dover's powder is daily administered in small and frequently repeated doses, and the bowels kept free by means of the pil. gambog. comp. Under this treatment she is gradually gaining weight ; her spirits, strength, and expression of countenance are improved ; there is also a corresponding diminution in the quantity of urine ; it is only now that the remedies are beginning to produce the desired effect. Her disease has been of long standing,† and is peculiarly obstinate. Her

\* This process of oiling the surface was used by Dr. Rollo in the view of preventing cutaneous absorption : the object was unnecessary ; the effect produced, in softening and relaxing the cuticle, salutary.

† This girl observed her hair to fall at the sametime that the thirst, appetite, and flow of urine became inordinate. About three months ago her hair was shaved off. Since that period it has grown to the length of about an inch.

case, however, as well as that of Hughes (both of which I have now under treatment), I reserve for a future communication. It is remarkable that, in both these cases, the disease is connected with distress of mind. Hughes was in perfect health until he received a dreadful shock, in the sudden death of his only son, a fine lad of eleven years, who, whilst going on a message to his father, was caught in a mill, and in an instant torn to pieces ; the poor man did not afterwards hold up his head ; by degrees the symptoms of diabetes came on ; and he is still low-spirited and broken-hearted.

There are not any functions in the body more closely connected and interwoven, the one with the other, than those of the skin and kidneys ; by both these organs substances, either deleterious or useless, are carried off from the animal economy. When, from any cause, the secretion of one is increased, that of the other is proportionably diminished. They seem each capable of performing an action vicarious to the other ; whence it would appear highly probable that very similar substances are expelled from the system by both these outlets. It is also remarkable that medicines, derived either from the vegetable or mineral kingdoms, possessed of diaphoretic properties, may, by a slight alteration in the mode of exhibition, be rendered diuretic. So closely connected are these two functions, that the same substances will act as excitants both to the one and to the other. This connection between the skin and the kidneys did not escape the notice of the accurate author of the *Cyropede*,\* as appears from the account he gives of

\* Καὶ νῦν δὲ ἔτι ἐμμένει μαρτυρία καὶ τῆς μετρίας διαίτης ἑαυτῶν, καὶ του ἐκπονείσθαι τὴν διαίταν. Δίσχρὸν μὲν γὰρ

the manner in which the Persian youth were educated : he notices their moderation in food, and their “working off” (ἐκπονεῖσθαι) that food by exercise. He speaks of it as a disgrace to be seen retiring for the purpose of making water, or of any other evacuation ; this, he observes, could not be the case, unless they made use of a restricted diet, and *consumed the humours by exercise*. Here is accurately described the plan of treatment by which the excessive flow of urine in the diabetes will most effectually be checked. By acting powerfully upon an organ, which is more intimately connected with the kidneys than any other in the body, the physician is furnished with a weapon capable of restraining, and even subduing, this formidable disease.

The remark has been made, that England, above all other countries, is that in which the diabetes is most prevalent. It has been attempted, in various ways, to account for this. A very general explanation is, that in these countries the disease is excited by the habit of drinking tea, punch, and other diluting fluids ; but were this the real cause, the disease should abound still more in France, where the natives freely indulge themselves in the weak and acid wines of the country. Potatoes, the reputed cause of so many ills, have not been suffered to escape without blame ; but I more than doubt that this disease has ever been caused by a vegetable diet ; even were this the case,

ἔτι καὶ νῦν ἐσι Πέρσαις καὶ τὸ ἀποπτύειν, καὶ τὸ ἀπομύττεσθαι, καὶ τὸ φύσης μεσοῦς φαίνεσθαι· αἰσχρὸν δὲ ἔστι καὶ τὸ οὕτω πονεῖν φανερόν γεγενῆσθαι ἢ τοῦ οὐρηθῆναι ἕνεκα, ἢ καὶ ἄλλου τινὸς τοιούτου. Ταῦτα δὲ οὐκ ἐδύναντο ποιεῖν, εἰ μὴ καὶ διαίτη μετρία ἐχρῶντο, καὶ τὸ ὑγρὸν ἐκπονοῦντες ἀνήλίσκον, ὥστε ἄλλη ποι ἀποχωρεῖν.

it surely would not account for its predominance in England, the country in which of all others the largest proportion of solid meat is consumed. No peculiarities of regimen will, I am persuaded, account for the greater prevalence of this disease amongst us : the true cause is of a very different nature, and may, I think, be traced to the fact that, diseases arising from atmospheric vicissitudes are more numerous in England than in any other country ; amongst these the diabetes may be classed. Suppressed perspiration, especially if connected with distress of mind, fear and apprehension, does more frequently than any other cause, give rise to this complaint. It would be interesting to ascertain whether the disease be rarely or frequently found in steady and warm climates—in climates where the heat of the atmosphere maintains an habitually relaxed and perspiring state of the skin. This enquiry is interesting in a double point of view, both because it would throw light upon the connection between the skin and the kidney in the diabetes ; and also, should it appear (as I suspect) that the true saccharine diabetes is a rare disease in warm climates, it would lead those who can afford to travel, and who have derived benefit from medical treatment, to quit for a while a country, in which every diabetic patient, however much the symptoms may have been relieved, is continually prone to relapse. It may be, that a residence of a few years in a warm climate would completely eradicate the disease. This is an important consideration, and well worthy the attention of medical men.

In the wonderful accounts which are to be found in the works of some authors (for there are persons, who, not sa-

tistied with the ordinary operations of nature, love to go in search of the marvellous) of the immense excess of the egesta above the ingesta, it seems to have been forgotten, that excretion by the skin is at an end. All that should have been removed by secretion from the surface of the body is carried off by urine ; besides, there is scarcely any pulmonary exhalation, and the feces are almost dry : the tears and saliva are scarcely secreted ; even ulcers cease to discharge ; so that all the humours of the body are passed off by the kidneys ; the urgency of the thirst calls for a large and continual supply of fluids : the patient drinks more abundantly than his medical attendant is aware of. If then all these circumstances are unitedly taken into the account, it will, I imagine, be found, that there is not such an immense disproportion between the ingesta and egesta, as some would lead us to think. That the more solid particles destined for nutrition are carried off by urine, is certain. It is one of the essential characters of diabetic urine—whether animal or vegetable diet has been used—that the specific gravity is raised beyond the standard of health ; hence nutrition is defective, and the body wastes ; there is also a degree of irritative fever, which, like hectic fever, interferes with and prevents the process of nutrition : this state of irritation in part accounts for the great value of opium in treating the diabetes.

Dr. Prout suspects that the urine is albuminous before it becomes saccharine ; this may be true ; and it is a fact important to ascertain, as the knowledge of it might enable the practitioner to meet the approaching evil, and prevent the full development of the disease.

Dr. Rollo mentions the case of a female, in whom habitually, and whilst in apparent health, the urine was insipid at one o'clock, after dinner saccharine, and natural in the evening. From this it appears probable, that however completely a diabetic patient may appear to be cured, the urine will ever after retain a slightly saccharine impregnation.

In a case which I lately treated, there was exhibited in a remarkable manner the power possessed by the vapour-bath of diminishing the urinary secretion. The patient to whom I allude laboured under pulmonary disease, the result of frequent and neglected colds : he had lived in habits of intemperance, and almost daily intoxication. In addition to the pulmonic symptoms, he was harassed by an intense thirst : he drank many quarts of cold and acidulated water in the course of the day ; his skin was scaly and dry ; the mucous membrane of his mouth parched and intensely florid ; the secretion of apparently healthy urine amounted habitually, in the course of twenty-four hours, to not less than sixteen pounds. For him the vapour-bath was directed. Though weakened and much emaciated he bore the bath without inconvenience : an abundant and general perspiration was produced ; the thirst ceased ; and the urinary secretion fell almost immediately to its ordinary standard.

The cure of a disease, so obstinate and fatal as the diabetes mellitus, ought never to be entrusted to any single remedy. A regular and systematic plan of treatment should always be adopted : and though the exciting and maintaining of an abundant and general diaphoresis, be the essen-

tial—the indispensable part of the treatment ; yet this measure, important as it is, should not supersede the adoption of other remedies : which, though comparatively of inferior value, are yet, by their combined action, capable of effecting much toward the removal of the disease. I shall conclude, then, by a brief enumeration of the several remedies, which by their united operation afford the best prospect of restoring the diabetic patient to the enjoyment of health.

First : When the disease is recent, and the strength not too far exhausted, blood-letting is a measure which should never be omitted. It may be necessary more than once to open a vein : the effects produced by the first operation will enable the practitioner to judge of the necessity of its repetition. Venesection will powerfully promote the action of those diaphoretic remedies to which principally the cure of the disease must be committed. Hughes was greatly relieved by a bleeding from the arm : it was followed by the tepid-bath ; an immediate and decided impression was made upon the disease.

Secondly : Leeches at the epigastrium will be found in many cases a valuable remedy. In the case of Galbraith, the local bleeding was attended with considerable advantage. When there is a feeling of internal heat, and the epigastrium is tumid and tender, and when there is a sensation of fulness, with what the patient describes to be “a gnawing feel about the stomach,” the application of leeches at the epigastric region will be attended with considerable benefit.

Thirdly : The bowels of the diabetic patient should every day be freely evacuated. Copious alvine discharges have



the effect of diminishing the urinary secretion : this is proved by the effects of the croton oil in the case of Hughes, and of the colocynth pill in that of Riddal. It may be desirable in some instances to excite a temporary diarrhœa by the action of purgative medicines. It will be necessary, however, to proceed with caution ; since any considerable derangement of the bowels will not fail to increase the severity of the disease. The safest course to adopt will be that of evacuating sufficiently, without violently purging the patient.

Fourthly : the diet of those who labour under the diabetes should be arranged with the utmost care. The process of digestion is rapidly and imperfectly performed ; the stomach easily oppressed and overloaded. Food should, therefore, be given frequently, but always in very moderate quantity—in a quantity far short of that which the craving desire of the stomach seems to demand. It would, I am sure, greatly conduce to the patient's recovery, could he be prevailed on to restrict himself to a certain portion of food at each meal, and not on any occasion to exceed the number of ounces prescribed. The articles of diet which I have found to agree best, are broiled meat, soup, bread, well-boiled rice, and gruel. Fish, from its tendency to create thirst and drowsiness, I cannot recommend : potatoes I have observed frequently to disagree. As an ordinary drink, I have not known any allay thirst more effectually than the carbonated lime-water. Beef or veal tea, milk with lime-water, and wine very much diluted, have also appeared to agree well.

Fifthly : Every effort must be made by remedies acting

directly upon the skin to excite that organ, and reproduce its suppressed functions. The vapour or tepid bath must be used perseveringly every day, or even twice a-day, until the vessels of the surface are excited, and the cutaneous secretion restored. The frequent immersion of the feet in warm water will sometimes succeed, even after the failure of more powerful remedies. At the same time the pulv. ipecac. comp. should be given in doses of eight or ten grains every third hour, till perspiration shall be fully established. A perspiring state of the surface should afterwards be maintained by means of warm flannel worn next the skin ; by active exercise ; and finally, if practicable, by a long residence in a warm climate. When the patient begins to regain strength, and appearances of amendment become decided, the cold bath will prove an useful tonic, and an excellent cutaneous stimulant. Under this treatment the patient will, if I mistake not, gradually recover his spirits and mental vigour, regain flesh and strength, find his thirst abate, his appetite grow less keen, and his urine improve both in quantity and quality. On the patient's own resolution and perseverance, much of the cure will depend : he must fully co-operate with his medical attendant. It would not be easy to name a remedy less irksome to the individual, or less injurious to the constitution, than daily and active exercise ; and if any remedy can diminish the liability to relapse, this, I am persuaded, will. The patient should, therefore, be particularly warned of the danger of laying aside too hastily a plan of treatment, which tends at once to remove the symptoms of the disease, and to guard against the danger of relapse.

## LECTURE XI.

### REMARKS ON CHLOROSIS AND HÆMORRHAGE

THE following general remarks on chlorosis and hæmorrhage were suggested by some cases of these diseases which were treated in the medical wards of Steevens' Hospital during the last session.

Chlorosis is an affection of frequent occurrence and great interest ; and though it has been repeatedly investigated by several distinguished pathologists, many points of considerable importance in its history yet remain to be explored and explained. We shall retain the name chlorosis as, perhaps, the best we can adopt ; it is, doubtless, one derived from a symptom, yet a symptom so invariably present that it sufficiently designates the disease. This is not the only instance in which we deem it necessary or convenient to employ the name of a symptom, as expressive of the disease which gives rise to it ; we may cite for example, jaundice, dropsy, and paralysis. It is sometimes better to retain even an objectionable word than to encumber science with new and often uncouth terms. We shall not speak of chlorosis as synonymous with anæmia ; the former refers to a specific disease, the latter bespeaks a state of the system, either general or local, which may arise during the progress of several diseases ; it was introduced into our vo-

cabulary by the eminent physician Andral, and (though not etymologically correct) is too useful and convenient a term to be parted with. There are many cases of chlorosis marked rather by an increase than a diminution of the total amount of the circulating fluid. In chlorosis there is a change in the quality, but not necessarily a change in the quantity, of the blood; so that chlorosis must be looked upon as a peculiar and distinct disease, and not identical with anæmia. In like manner hyperæmia is a convenient term to express a surplus of blood, generally or locally, but it is not expressive of any particular disease; and in speaking of hæmorrhage in contrast with chlorosis, as we propose to do, it is necessary to draw a marked line of distinction between hæmorrhage—which sometimes arises even when general anæmia exists—and the state of hyperæmia.

It has been already remarked that there is no proof of deficiency of blood in chlorosis; on the contrary, there is strong presumptive evidence that an actual excess of blood, though of inferior quality, characterises some cases of the disease; and it is worthy of remark, that in the treatment of chlorosis, the moderate abstraction of blood by the lancet, by leeches, or by cupping, not only does not aggravate the symptoms, but so far from this, when incidental affections demand depletion, is followed by the best effects. The disease in reality consists, not in a diminished quantity of blood, but in an altered quality—a diminished consistency of this fluid; herein lies its very essence, and any term which signifies the former, not the latter condition, is at least objectionable as applied to chlorosis. In

chlorosis the blood undergoes a very remarkable change ; its specific gravity is lowered ; the clot is small and firm ; the serum bears too large a proportion to the crassamentum ; water is in excess ; the red corpuscles are far below the healthy standard in quantity ; their appearance, however under the microscope, is natural ; and the fibrin, in the majority of cases, is normal in quantity, firmness, and cohesive power.

In hæmorrhagic diseases, the chemical and physical characters of the blood are very different. Its specific gravity is seldom much below, and occasionally even exceeds the healthy standard ; the separation into clot and serum is imperfect, and the clot bears too large a proportion to the serum ; the quantity of fibrin is less than in healthy blood, or, at least, its proportion to the red corpuscles is less than is found in a state of health ; the quantity of red corpuscles is either absolutely increased, or their proportion to the fibrin is larger than in healthy blood ; and the quantity of solid constituents frequently exceeds that of the normal fluid. The clot is, in general, large, soft, and of a dark red, or almost black colour ; sometimes the formation of a clot does not take place ; a buffy coat is scarcely ever observed, except when fever or inflammation is present ; and the serum is frequently tinged with red by the presence of red corpuscles in suspension. Under the microscope, the red corpuscles are most commonly seen of small size, with their edges lacerated and irregular ; mingled with these are numerous shrivelled, apparently empty, colourless cells, the walls of which are of extreme delicacy.

These facts respecting the characters of the blood in chlo-

rosis and hæmorrhage are established by the well-conducted experiments and accurate analysis of Andral, Gavarret, Denis, Lecanu, Simon and others ; and have been corroborated by numerous observations made in the hospital by Dr. Hill, under my own superintendence.

The following briefly noted cases will, on comparison with each other, serve to illustrate the distinguishing characters of chlorosis and hæmorrhage :—

Mary Callaghan, aged 17, a domestic servant, of middle stature, spare habit, and chlorotic appearance, was admitted into Steevens' Hospital, August 2, 1845. The integuments are of a sickly white, waxy hue, with a slight tinge of yellow on those parts which are most exposed to light. The extremities are habitually cold and moist, especially the feet, which, she says, are never warm. She complains chiefly of constant frontal headache ; pain, with tenderness on pressure in the hypogastric region, chilliness, languor, and weakness in the back. The tongue is pale and moist, the appetite delicate, nausea frequent, and bowels always confined. Respiration performed twenty times in a minute ; no cough nor pain in either side, and the respiratory sounds healthy. Pulse 96, feeble ; heart's action tranquil whilst she is at rest, but any sudden exertion or emotion produces violent palpitation. The first sound of the heart is accompanied by a loud, rough *bruit*, which varies much in intensity at different periods, and under different circumstances of excitement, but has been present, more or less, at every examination. There is no evidence of hypertrophy of the heart, nor can any murmur be detected in the arteries or veins. There has been no appearance of the menstrual discharge for the last eight

months, previously to which time it was always regular, and she is unable to account for its cessation. She has never suffered from leucorrhœa, nor observed any tendency to œdema in any part of the body.

Urine is passed in natural quantity ; is of pale, limpid appearance ; specific gravity at 64° Fah., 1008 ; faintly reddens litmus paper, and is free from albumen. She states that, notwithstanding the derangement of the uterine functions, she enjoyed tolerable health until four months since, when she began to suffer from headache, nausea, and general debility. Four ounces of blood were taken from the arm, and the following observations made :—

Temperature of atmosphere	. . .	64° Fah.
„ under the tongue	. . .	100° „
„ in the axilla	. . .	95° „
„ of blood as it flowed	. . .	97·5° „
Specific gravity of blood at 75°, Fah.	. . .	1·031.
Specific gravity of serum at 64°, Fah.	. . .	1·025.
In 1031 grains of blood,		
The weight of serum was	. . .	760 grains.
The weight of the clot	. . .	271 „

being in these proportions of 1000 to 356·5. These proportions were taken twelve days after venesection.

The blood, when flowing, seemed nearly as thin as water, and was of a bright florid colour, resembling that of arterial blood. The clot was very small, firm, of a dark reddish colour, and without any appearance of buffy coat. The serum was transparent and colourless. Under the microscope the characters of the red corpuscles were normal.

P. Conolly, aged 22, a weaver, of spare habit, but florid



complexion, was admitted into Steevens' Hospital, July 17th, 1845. The entire surface of the body, excepting that of the face, hands, and feet, is thickly covered with brownish red petechiæ, mingled here and there with small, more deeply seated, and dark coloured ecchymoses. At the upper part of the forehead are several broad red patches, covered with furfuraceous scales. The gums are soft, spongy, of a purple colour near their junction with the teeth, and bleed freely whenever he masticates any hard substance. The tongue is clean and red; no petechiæ are observed within the mouth. He is very subject to epistaxis, a severe attack of which, two days ago, induced him to apply for admission into hospital. His appetite is good, and his bowels usually regular, but at present they are confined; in other respects his general health appears unaffected. Pulse 76; heart's sounds normal. Respiration 18 in the minute. He states that, during his childhood, he was occasionally subject to epistaxis, and that, about seven years ago, he first observed a number of small red spots upon his arms, which he, at that time, mistook for flea bites; these spread in successive crops all over his body, and shortly afterwards he became subject to frequent hæmorrhage from the nose, gums, and bowels. He says that the spots fade and die away sometimes, but that, ever since their first appearance, he does not remember having been totally free from them for more than a few weeks at a time. Previously to the commencement of the disease he was in very distressed circumstances; of late years, however, he has been able to earn a comfortable subsistence. Four ounces of blood were taken from the arm:

Temperature of the atmosphere	. . .	63° Fah.
„ under the tongue	. . .	97° „
„ of blood as it flowed	. . .	98° „
Specific gravity of blood at 64° Fah.	. . .	1.054
„ of serum at 64° „	. . .	1.027
In 1054 grains of blood,		
The weight of serum was	. . .	238 grains.
The weight of the clot	. . .	816 „

being in the proportion of 1000 to 3428.5. These proportions were taken twelve hours after venesection. The blood, as it escaped from the vein, appeared thin, and was of a florid red colour. The clot was very large, soft, black, and soluble in water. The serum held a great number of red corpuscles in suspension. Under a high magnifying power, the recent blood exhibited a great number of ruptured corpuscles; their general size was, however, normal. In a drop of the tinged serum were seen numerous red corpuscles, of which about one-fourth were of natural size and appearance; another fourth were of natural size, but with lacerated edges and irregular surfaces; whilst the remaining two-fourths were of small size, not exceeding the dimensions of the central nucleus of a normally-sized red corpuscle. There were, in addition, numerous thin, membranous cells, empty and corrugated, floating in the serum.

These cases exhibit in strong contrast the characters of the blood in the chlorotic and hæmorrhagic conditions. They are extreme cases, and are given as such; in other instances which we have examined were observed degrees of contrast, from the minutest shade of difference to the extreme amount now portrayed. The most striking dis-

tinctive character is in the specific gravity of the blood ; in the chlorotic case it was 1031 ; in the hæmorrhagic case 1054 ; but there are other remarkable differences, and these are at once recognized by a reference to the examination made. We do not profess to give a minute chemical analysis of the blood ; our object is to mark the prominent and distinctive characters in each condition of the blood, and thence we hope to arrive at useful practical deductions.

From the pathological state of the blood which characterises chlorosis, many interesting phenomena spring ; upon these, in succession, we shall make a few observations and practical remarks.

The first important symptom which we shall notice, as a consequence of this imperfect sanguification—this deficiency of the red corpuscles—is the low degree of animal heat. Well-marked chlorosis is distinguished by an universal chilliness ; the extremities are, in many cases, insuperably cold ; and scarcely are they warmed by exercise or artificial heat till (the loss by radiation and evaporation not being supplied by the blood) they again become destitute of animal heat. Even in bed this coldness of the extremities remains for hours, and prevents sleep. Sometimes they are deadly pale and dry ; at other times swollen, livid, and clammy ; but in either case they are characterised by a very low degree of temperature. The whole condition of a chlorotic patient in many respects resembles that of a cold-blooded animal. There exists also a marked incapability to bear extreme ranges of atmospheric temperature. So long as the blood continues in the deteriorated state which constitutes the essence of this affection, the individual ceases to

possess that power of adaptation to climatic extremes which distinguish the human race. To such persons summer heats and winter colds are distressing and intolerable ; they thrive best in a dry, invigorating, and moderately warm atmosphere ; and their sufferings would be much mitigated were the air they breathe always of an uniform and medium temperature. In the treatment of chlorosis much advantage is derivable from remedies capable of supplying this deficiency of animal heat : for example, from warm pediluvia, frictions, shower-baths, and such covering of the body as shall not debilitate, and yet prevent the too rapid escape of caloric by evaporation or radiation ; but above all, from well-regulated exercise, both equestrian and pedestrian, not exceeding the then existing physical powers, but gradually augmented as these powers by habituation acquire force. To these should be added, when practicable, travelling and daily quick transitions through the air, as in an open carriage, so as to stimulate the lungs, and improve the respiratory and circulating functions.

The importance of this mode of treatment is shown by the following observations, quoted from Simon's "Animal Chemistry" :—"When there is a paucity of corpuscles, the necessity for the absorption of oxygen is diminished in a corresponding ratio, the circulation becomes slower, and there is less heat developed than in the normal state ; on the other hand, blood with an excess of corpuscles, but which is circulated slowly, develops less heat than blood which contains a smaller proportion of corpuscles, but which is more rapidly circulated, for more oxygen may be consumed in the latter than in the former case."

The production of animal heat is unquestionably much influenced by the rapidity of the circulation, as well as by the quantity of blood corpuscles. Of this we may convince ourselves by a reference to the researches of Prevost and Dumas on the relation between the mass of corpuscles and the temperature in various animals. For instance, in the goat the amount of blood corpuscles is considerably less than in man; but the temperature of the former exceeds by four or five degrees that of the latter. This may be accounted for by the fact that, in the goat, the pulse is, by ten or twelve beats in the minute, quicker; and respiration, by six in the minute, more frequent, than in the human subject.

Becquerel and Breschet have also ascertained, by means of a thermo-electric multiplier, that each contraction of a muscle is accompanied by an elevation of temperature amounting in some instances to  $2.6^{\circ}$ . In this manner we may, perhaps, account for a portion of the increased temperature that succeeds active exercise.

When the blood has undergone the morbid changes described, when the red corpuscles are deficient and animal heat imperfectly supplied, it follows as a necessary consequence that the nervous and muscular systems, being supplied with deteriorated blood, should exhibit in their functions a corresponding degree of depression. If this be closely investigated, and due allowance made for the different degrees of activity which belong constitutionally to different individuals, it will appear that in every real case of this disease, there is a varying amount of energy abstracted from the brain, nerves, and muscles, and indicated

by languor of mind and lassitude of body. To form a correct estimate it must be founded on comparison of what the individual had been in health, and now is when labouring under chlorosis. In the severer and more advanced forms of the disease the contrast is most striking.

There are two remarkable symptoms which, to a greater or less extent are, I believe, always present in chlorosis, namely, palpitation of the heart and dyspnœa, on making exertions such as in health would be utterly incapable of producing these effects. In many cases the palpitations produced by ascending even a few steps of stairs are exceedingly distressing ; in some instances the dyspnœa is the more urgent symptom ; they are, however, generally found to co-exist and to be caused by very slight muscular exertions and mental emotions. The varied disturbances of the heart's action constitute a very prominent symptom ; nor is this opposed to what we might anticipate when we consider how much altered are the constituents, and consequently the stimulus, of the circulating fluid. We also find that the pulse is often quick, small, and weak ; for, though the contractions of the heart occur in rapid succession, the blood wave propelled at each systole is diminished and powerless. In an early stage of the disease, when the patient is quiescent, the pulmonary and cardiac motions are tranquilly and often languidly performed ; the heart and lungs, however, partaking of the general enfeeblement, and receiving and circulating an impoverished blood, exhibit signs of hurried action and disturbance when even a very slight amount of augmented labour is exacted from them. But when the chlorotic affection is further ad-

vanced, when the general torpor is increased, and the blood reduced to a very low degree of attenuation, then the breathing and the pulse become permanently disturbed and quickened.

To the same sources may be referred the derangement of the assimilative function—the diminished appetite, the slow performance of digestion, and the inactivity of the intestines. The constipated state of the bowels is a very constant symptom; it has even been asserted that purgatives alone are capable of curing the disease. That they are in many cases useful, often highly so, experience has fully established; the assertion that they are to be solely relied upon, all experience contradicts. In a very large proportion of cases the first curative step is to evacuate thoroughly the intestinal canal; and to effect this purpose such medicines should be employed, assisted by enemata, as will insure sufficient action of the bowels without depressing the vital powers. Cases of chlorosis occasionally occur in which diarrhœa, or a tendency to it, prevails; these, however, are exceptions to a general rule, and may be traced, in the majority of instances, to constitutional predisposition, to unwholesome, indigestible food, or to atmospheric vicissitudes. Diarrhœa is not properly a symptom of the disease. The more the respiratory functions and the condition of the blood are improved by appropriate treatment, the more certainly will the appetite and intestinal actions be approximated to the normal state. The diet best suited to a chlorotic patient merits consideration. The appetite and digestive powers being enfeebled, it is necessary that the quantity consumed



at each meal should not exceed the assimilating powers of the stomach ; the food should be well masticated, and consist in articles of diet most highly nutritive. In some there is a distaste to solid animal food ; then the substitutes provided should contain in small bulk as much nutritive matter as possible, that thus the object in view—to enrich the blood without overloading the stomach—may be attained. When the stomach can receive and digest them, tender, old, and gravy meats, and game, claim a preference. In regulating the diet of the chlorotic patient, much stress should be laid upon the necessity of supplying animal heat more abundantly. It should then be the opposite of that which in tropical climates is provided by nature, and more in accordance with that used in cold climates ; hence articles of food abounding in carbon, such as butter, cream, oil, and fat, should be mingled with the daily food, in quantities not exceeding that which the stomach is fully capable of digesting. For the same reason, unless forbidden by some constitutional peculiarity, good wine, and brandy and water, should be liberally allowed ; porter and ale suit some individuals better, and attain the same object. These are the cases in which I have seen the most decided advantage from brandy and new milk taken early in the morning ; in many such cases too the *Oleum Jecoris Aselli* has been particularly beneficial. The diet then in chlorosis should be so regulated that, without oppressing the stomach, the blood may be enriched and animal heat promoted.

In this disease, “Chlorosis,” characterized as it is by a general depression of the vital functions, the wasting of the body is slow ; may we not then justly conclude that the activity of the

absorbent system is also diminished? and when emaciation does occur, may it not arise more from deficient deposition than from increased absorption? Assuredly in the early stages of this affection, there is scarcely a perceptible amount of emaciation; and it is not until the disease be advanced that this symptom becomes apparent. I have often been struck with the plumpness of those who exhibited unequivocal evidence of the presence of chlorosis, though the same torpor which pervaded the whole system had affected likewise the nutritive function.

The urine in chlorosis possesses distinctive properties of considerable interest: it is usually pale, of low specific gravity, and of a mildly acid reaction; it contains, according to the analyses of Becquerel, a large amount of fixed salts, a small quantity of uric acid, and a very small proportion of urea; the diminution of the urea being both absolute and relative, and always keeping pace with the deficiency of red corpuscles in the blood. The difference between this condition of the urine and that which prevails during the occurrence of hæmorrhage is very striking, and shall be hereafter noticed.

From the general torpor the uterine functions are not exempted; their derangement has been frequently and confidently put forward as the real and efficient cause of this disease, with what amount of truth facts must determine. This opinion derives support from the following considerations:—That chlorosis is especially a feminine disorder; that its origin is often attributed by the patient to a sudden suppression of the catamenia; and that the period of its most frequent occurrence is that of puberty—the period

immediately antecedent and subsequent to the establishment of the menstrual discharge. But it must be remembered that this is also the period of the completion of growth ; as this period approaches, the various systems undergo rapid development, and then it is, or soon afterwards, that this characteristic pathological state of the blood most frequently arises. To me it has often appeared that chlorosis has a more intimate relation with that epoch of life when the frame has nearly reached its full development, than with the uterine functions. Be that as it may, much stress has been laid upon menstruation, and the derangement of this function has been fixed upon by many as the starting point of the disease.

To what extent do facts and observations sustain this opinion ?

In the first place chlorosis is by no means limited to the female sex ; and in the next, it may with truth be stated that, in a large proportion of cases, the uterine is not more disturbed than any other vital function ; the patient menstruates regularly, but less abundantly than in health, and the fluid excreted is, like the blood, deficient in red corpuscles, and hence in colour less deep. This is the only disturbance of uterine function observable in a considerable proportion of cases of chlorosis ; and if the cases be carefully investigated, in which the menses are irregular or suppressed, it will often be found that there existed constitutionally or hereditary a disposition to irregularity or suppression of the monthly discharge. When, however, the disease is far advanced, or extreme in degree, and every vital function impaired, it most commonly happens that

this function partakes of the general depression, and either recurs in extremely diminished quantity, and at irregular periods, or altogether ceases. Numerous observations which I have made on this subject lead me to the conclusion, that the irregularity, diminution, and cessation of the uterine function, are the effect, not the cause, of the disease. The derangement of the menses can only be removed by the removal of its cause ; the treatment, therefore, best calculated to restore the blood to its normal state is that best suited to the restoration of the healthy uterine action. I have seen cases of this affection treated with no other view than that of reproducing the menstrual discharge, and the treatment has been unsuccessful, because based on an erroneous principle. There is in many cases of chlorosis a profuse and wasting leucorrhœa ; this symptom has also been seized upon and announced as a cause ; yet this, too, is a consequence, and probably connected with the excess of serum in the blood ; like any other prominent symptom however, arising during the progress of a prolonged disease, it merits especial attention, and requires appropriate local treatment. It is not always safe suddenly and completely to suppress this discharge ; it should be moderately checked, whilst the treatment which tends to remove the original disease is steadily employed. It may here be remarked that, in chlorosis, sanguineous exudations are comparatively rare, whilst serous exudations—vaginal, intestinal, pleuritic, peritoneal, cerebral, and subcutaneous, are by no means uncommon. In the management of these affections, whilst local treatment is essentially necessary, the leading object should be to alter and improve the condition of the blood

itself. The contrast between the two states, that of chlorosis and that of hæmorrhage, is herein strongly marked; menorrhagia is rare, leucorrhœa by no means uncommon.

Of the characteristic symptoms of chlorosis there is not one more strikingly apparent than the well-known change of colour and complexion by which this disease is recognized. It is not mere pallor, for many healthy persons are extremely pale, it is a morbid aspect—a peculiar greenish yellow tint, familiar to the observant eye, and best expressed in the appearance of the skin after a bruise or ecchymosis, when, absorption being nearly completed, a slight greenish yellow discoloration of the skin remains for several days. It is this hue of the integuments which has given origin to the popular name of the disease, “the green sickness.” The peculiar complexion of chlorosis depends upon the diminished proportion of red corpuscles in the blood circulating in the capillary system; as the result of which a yellow tint is imparted to the skin, either from the colouring matter of the liquor sanguinis, termed hæmaphæin, or as the direct consequence of the smaller number of red corpuscles in the vessels; since it is well-known to microscopical observers that the colour of an isolated corpuscle is yellow, and that it is only when aggregated in considerable numbers that they appear red. The change of colour above described is not confined to the external skin, the mucous membranes also, though in a less evident degree, participate in the pale and bloodless hue caused by the paucity of the red corpuscles in the capillary vessels.

Having now enumerated what may be termed the essential symptoms of chlorosis—the depression of animal heat,

the prostration of the cerebral, nervous, muscular, cardiac, pulmonary, intestinal, and uterine functions, together with the characteristic hue of the tegumentary membranes—it remains to make a few remarks upon other symptoms, some of frequent, others of occasional occurrence, which, though they belong not of necessity to the disease, are nevertheless so apt to arise during its progress, that to omit them would be to leave the history of this affection altogether incomplete.

The history of diseases would be much simplified were the complications, in the order of their frequency, carefully distinguished from the essential symptoms. These complications perplex and prolong the treatment, which, but for them, would be simple, easy, and certain. There are few diseases more completely under the control of remedies than uncomplicated chlorosis. Of the complications there is none more frequent, none more disturbing to the regular course of treatment, than the various neuralgic affections and local pains with which many chlorotic patients are afflicted. There is an intimate connection between chlorosis and hysteria; none are more disposed to become chlorotic than those who are hereditarily or constitutionally predisposed to hysteria. I have seen, during the progress of this affection, every variety of hysteric symptoms to arise; I have also seen it complicated with chorea. Nearly allied to hysteria, if not identical with it, are those spinal tenderesses and irritations which propagate pains to every part of the body. These neuralgic pains are oftentimes so severe that the lives of chlorotic patients are rendered miserable by them; and so harassing that every other feel-

ing and consideration is absorbed in uneasing solicitude for their removal or mitigation.

Many individuals suffer from intense frontal headache either constant or periodical, from acute pain in one or other of the sides, in the epigastric or hypochondriac regions, and sometimes even in the extremities. In such cases the treatment must be complex ; yet whilst the leading object—the amelioration of the condition of the blood—should never be lost sight of, the means best calculated to mitigate and remove the neuralgic complication must not be omitted. In some cases, particularly those in which there exists in some part of the spinal column much pain on pressure, with strongly marked evidences of spinal irritation, it may be necessary to detract blood either by cupping or by leeches. Care, however, must be taken that the quantity of blood drawn should be small ; leeches should not be too numerously applied, nor a prolonged bleeding from the bites encouraged. The operation of cupping has, in this respect, a great advantage, that there is no after bleeding, and when it can be quickly and dexterously performed it is a superior remedy. I have seen chlorotic patients permanently injured by profuse local bleeding. In general the frequently repeated application of small blisters on either side of the spine is the preferable mode of treatment. In many cases of spinal irritation the pain and tenderness on pressure are found to exist, not along the line of the spinous processes, but on one or both sides of this line. Moderate pustulation is sometimes more effectual than blisters. For the removal of neuralgia, anodynes, particularly opium, should be spar-



ingly and cautiously given. If it constipate the bowels and diminish the secretions, temporary relief will be often purchased at a dear price. Opium, too, by prostrating the nervous energy, injures the respiratory function, and thus adds to the existing imperfection of the blood. It may be necessary to give an opiate—a night's unbroken rest may not be otherwise attainable ; it should, however, be looked upon as a thing of necessity, and should, if possible, in chlorosis be avoided. I have occasionally observed marked advantage from small doses of aconite, and in one case of chlorosis with severe facial neuralgia, a great mitigation of pain was effected by a single dose of the *canabis indica*. All these potent agents, however, which lower the vital energies are ill-suited to a disease, the characteristic of which is to depress, below the normal standard, every function necessary to the maintenance of life. They should be employed cautiously, and should not be long persevered in. The local application of anodynes and sedatives is oftentimes more safe, and in efficacy not inferior to their internal administration. Lint soaked in anodyne lotions, placed upon the painful parts, and overlaid with oiled silk, is in many instances a remedy of value ; so likewise is their application over a blistered surface, the cuticle having been removed. The ointment of the sulphate of veratrine (a scruple to an ounce of axunge) I have found particularly efficacious. The neuralgic pain is sometimes, but not often, removed by lightly touching the adjacent skin with heated iron. In all these complications, the first object must be to improve the blood, the second, to remove the neuralgic pains.

Amongst the nervous disturbances to which the chlorotic state is liable, I am disposed to class a very remarkable symptom, one by no means uniformly present, but yet so frequent as to demand a distinct consideration. That to which I refer is the variety of abnormal sounds which accompany the action of the heart and arterics. These sounds vary : sometimes the systolic sound is a sudden, loud, sharp sound ; at other times it is rough and harsh ; sometimes it is best represented by the quick transit of a whip through the air ; more frequently it is the bellows-sound or murmur which reaches the ear. This murmur is not confined to the heart ; it extends along the arteries, and the transmission of the blood through the veins is not always effected silently, a peculiar and remarkable sound being heard in some of the larger venous trunks. These abnormal sounds are not the result of organic disease, but arise solely from disturbance of function. This is an interesting and important phenomenon ; important, because it establishes the fact, that sounds so frequently characteristic of valvular disease, may and do originate in mere functional disturbance.

As a more distinct and comprehensive account of these sounds, and the circumstances under which they arise, is nowhere to be found than in Dr. Latham's valuable lectures, I shall quote at full length his clear and emphatic description of the phenomenon, though I do not entirely agree with him in the explanation which he has given of it. After having dwelt upon endocardial murmurs as the result of mechanical impediments to the circulation, he says :—

“Certain endocardial murmurs yet remain to be noticed, which are quite distinct, pathologically, from all these. Synchronous with the systole of the ventricles, audible in the præcordial region, and extensively diffused through the arteries, resembling the bellows-sound, and so having the commonest quality of endocardial murmurs, not distinguishable by the ear from those which proceed from mechanical impediment to the passage of the blood, yet themselves springing from a different cause, they form a class by themselves, and a most important class it is. I allude to the cases in which there is an unnatural sound, both endocardial and arterial, and yet no change of structure in the heart and arteries, but a change in the relative proportions of the constituent elements of the blood. The one general fact with which the sound is constantly associated is an impoverishment of the blood, or the state in which its red globules are deficient, and its serum is in excess. Now this impoverishment of the blood would seem to stand to the endocardial murmur in the relation of a cause, from observation of their constant coincidence merely; and much more so from the observation that upon the removal of the first the second always ceases. In proportion as, under proper treatment, the blood becomes richer, and is made to abound more in red globules, the murmur waxes fainter and fainter in the heart and arteries, until it is finally altogether inaudible in both. But if this endocardial and arterial murmur be really owing to an impoverished state of the blood, one would expect to find that the simple abstraction of the blood to a large amount would produce it at any time in a healthy person. And so it will.

We are not, indeed, accustomed thus to bleed healthy persons purely for the sake of experiment: but healthy persons sometimes become the subject of such treatment in the case of accident and injuries, and in the first access of acute inflammation; and then we take advantage of the occasion for learning the effect of the experiment beyond the purpose for which it was instituted. And so we find that if in a healthy man we carry bleeding far enough to blanch the surface of the body, we create an audible systolic murmur in the præcordial region, and diffuse it through the arteries.

“Now this murmur is prominently characteristic of certain forms of disease; and, knowing how we can produce it at will, we should expect to find nature producing it exactly or nearly in the same way. Profuse or protracted menorrhagia, by the time it has blanched the skin, has this murmur for its sure accompaniment. Here is direct loss of blood. Chlorotic anæmia has the same. Here is no direct loss of blood, but, what is tantamount to it, a defect or failure of the assimilatory functions, whence the mass of blood is not replenished in due proportion to its expenditure upon the uses of the economy. Generally accompanying the endocardial and arterial murmur, when it is owing to anæmia or an impoverished blood, there is another sound quite different in kind, and formed neither in the heart nor in the arteries, but traceable to the same pathological condition. In following the murmur from the heart along the aorta and subclavian artery, and then above the clavicle when you reach the carotid you find a new sound superadded to it. You perceive the bellows-murmur coming and going

with distinct whiffs, and keeping time with the systole of the heart in the neck as in the chest ; but in the neck you perceive, moreover, a *continuous hum*, like that which reaches the ear from the hollow of a marine shell. This is a thing so evident that it was noticed and described, and variously speculated upon, by those who first practised auscultation. But their speculations were wide of the mark. Whence or how it arose no one could tell, until the sagacity of Dr. Ogier Ward traced it to the veins, and showed it to proceed from the movement of the blood within them. The vein which offers itself most readily to the application of the stethoscope, and admits all the easy experiments which serve to certify the fact, is the internal jugular. Place the instrument on the neck, by the side of the trachea, and pretty close to it, and at the same time rest your finger upon the space between the angle of the jaw and the mastoid process ; and when your ear has caught a continuous humming sound, and listened for a while and made sure of it, then press your finger firmly down upon the vein, and the sound, if it be the true venous murmur, will immediately cease ; then raise your finger, and, if it be the true venous murmur, it will immediately return. A little management and address are needed to find this venous murmur, and then keep it within hearing when you have found it. I have seen it found by accident, heard for a minute, and then lost and never heard again. The instrument has been laid carelessly upon the neck and the murmur has been audible immediately ; and then, in expectation of making it heard to more advantage, the neck has been put upon the stretch, the chin raised and the head thrown back, or turned far

round to the opposite side, whereupon the murmur has ceased ; then the neck has been relaxed, the head brought forward, and the chin inclined towards the sternum, but the murmur has not returned. The truth is, a very free current of blood is essential to the production of the venous murmur. A slight degree of pressure upon the vein will alter its character, and pressure very far short of that which would arrest the current of blood will abolish it altogether. And thus the neck being put upon the stretch the muscles which lie parallel with the vein and across it are made to exercise pressure enough upon it to interfere with the free current of blood, and to stop the sound ; or the neck being relaxed, the veins and the integuments get folded together, and so pressure is produced in another way, and this equally stops the sound. Try different degrees of pressure upon the internal jugular vein with the stethoscope when this venous murmur is distinctly audible, and you will find how lightly you must hold the instrument to keep it constantly within hearing, how inconsiderable an amount of pressure will obliterate it, and how each degree short of that which obliterates it will give it sundry varieties, and make it musical. Now these murmurs, whether appertaining to the heart and arteries or to the veins, which have their origin in the quality of the blood that circulates within them, furnish an eminent example of the highest degree of comprehensiveness, both for knowledge and for use, which can belong to the idea of a symptom.

“ Where these murmurs are, there a countless variety of other symptoms is found in company with them, pointing to all organs of the body, and giving notice that the

functions of all are going wrong ; the surface pale and cold, palpitation and dyspnœa, appetite perverse, digestion imperfect, nutrition insufficient, secretions scanty and unhealthy, pain everywhere, and a shattered nervous system and an enfeebled brain. Such a portentous crowd of symptoms strikes the observation at once. But what they all mean we cannot tell, until we take one single symptom for their sole and sufficient interpreter. The murmur which is at the same time endocardial and arterial and venous is comprehensive of them all, and includes the knowledge of them all, inasmuch as it points directly to their one common source, even the impoverished blood. And further, this same murmur not only contains the knowledge of all the rest, but it is the single representative of them all as an indication of treatment. Standing as it does for the sign of impoverished blood, we treat what it denotes and nothing else. But in so doing we treat inclusively every error of function throughout the body which proceeds from it."

Such is Dr. Latham's lucid description of the nature and cause of these abnormal sounds. Are we, however, borne out by observation in ascribing them exclusively to the impoverished state of the blood ? I do not think so. If this be the sole and true explanation, why does it happen that there are so many cases of chlorosis, in which the specific gravity of the blood is so low as 1.035—cases which we have examined with the utmost attention, both in the quiescent and excited states—in which this symptom is totally absent ? Why is it that this symptom is not more



uniformly present? Why do we find it to-day, and lose it to-morrow? Why do mental emotions and sudden exertions produce it? Why is it occasionally present in hysteric patients not labouring under chlorosis? and why is it that this symptom does not manifest itself in cases of profuse hæmorrhage which are slow and gradual, whilst it does, though not uniformly, in cases of rapid and profuse bleeding? Would it not appear from these considerations that these abnormal sounds are, in a considerable degree, dependent upon disturbance of the nervous function of the heart and arteries in excitable and hysteric constitutions? Doubtless the attenuation of the blood, both in chlorosis and profuse hæmorrhage, strongly predisposes to the production of these sounds; but their immediate exciting cause is referable to nervous disturbances; so that, to give rise to this symptom, the contractions of the heart and arteries must, from causes connected with the nervous system, be imperfect and irregular. Hence the blood is propelled in broken streams, after the manner so faithfully described by Dr. Corrigan; and although an attenuated state of the blood renders this more likely to happen, yet that condition alone will not explain the phenomenon. In reference to the subsidence of morbid sound keeping pace with the improvement in the quality of the blood, it should be borne in mind, that the treatment which most effectually enriches the blood does also as effectually restore tone and healthy action to the nerves.

Chlorotic patients are liable to various incidental affections of the lungs. Acute bronchitis and acute pneumonia are not of very common occurrence; nor is bronchial

hæmorrhage, or pulmonary apoplexy. These are more likely to occur in cases of anæmia produced by antecedent hæmorrhage or wasting disease, than in true chlorosis. I have, however, occasionally seen chlorosis complicated with circumscribed chronic pneumonia, and frequently with chronic bronchitis, terminating ultimately and remotely in tubercular phthisis. In this affection, therefore, a prolonged and intractable bronchitis is a formidable symptom. Nevertheless, when I compare the number of chlorotic cases ending in phthisis, with the number of hæmorrhagic cases ending in the same disease—judging from my own sphere of observation—I find the latter greatly to exceed the former. I may further add, that, in the prophylactic treatment of phthisis, considerable modification is requisite ; inasmuch as that which is best calculated to prevent the chlorotic, is not, in all its details, equally suitable to what may be termed the hæmoptysical phthisis. I have seen a few cases of chlorosis complicated, some with periodic, others with irregular spasmodic asthma.

Chlorotic patients are also subject to a very great variety of incidental disturbances and perversions of the digestive function, which, in some cases, throw serious obstacles in the way of treatment, and render it more tedious and difficult. Of these, one of the most frequent is the distension of the stomach, which arises after meals, no matter how simple and easy of digestion the food may be. In many instances we meet with most distressing gastric and intestinal flatulence ; not such as results from mere indigestion, but a copious and continual secretion of gas, similar to that which we so frequently find to arise in hysteric patients.

This symptom is sometimes accompanied with a constant noise and motion of the intestines ; a rumbling so loud as to be audible to those around, and exceedingly distressing to the patient. The gas, pent up by irregular contractions of the intestines, is the cause of severe and sharp pains, not only in the abdomen, but in remote situations. It is often the sole cause of intense pains in various parts of the chest, shoulders, sides, and also along the limbs ; pains which are at once removed by any medicine which has the effect of expelling or even displacing the confined air. In such cases a portion of the intestine may be observed to swell, and thus form a large, circumscribed, tympanitic tumour. These symptoms are greatly relieved by warm, cordial cathartics ; by stimulating frictions and rubefacient applications, such as mustard or turpentine, over the abdomen ; and by small, frequently-repeated doses of the rectified spirit of turpentine internally. A drop or two of creasote, in a pill to be taken thrice daily, is often exceedingly useful when given in conjunction with the compound galbanum pill. Galbanum itself, in full doses, is in some cases a most effective remedy. I have also seen marked advantage to arise from newly-burned and finely pulverised carbon ; the charcoal derived from box-wood is, I think, the best ; and the less the powdered charcoal is exposed to the air the more efficient it is. The following powder has proved itself, in many instances, a remedy of value : Of freshly-burned charcoal reduced to fine powder, a scruple ; calcined magnesia, ten grains ; powdered nutmeg, five grains. Mix. To be blended with a little milk first ; then a sufficiency of water or milk added to suspend the powder, so that it may be

easily taken. It may be repeated two or three times daily. Should the bowels be disposed to relaxation, powdered crabs' claws or precipitated chalk may be substituted for the magnesia. I have known chlorotic patients who had been greatly harrassed by these incessant gaseous secretions—after every variety of treatment and the most careful regulation of diet had failed to procure more than temporary alleviation—ultimately and completely cured by travelling and repeatedly changing the air. Amongst the occasional symptoms which complicate chlorosis, we meet with instances of an extraordinary perversion of appetite. Those so affected are very unmanageable patients. As this symptom, however, belongs more properly to hysteria than to chlorosis, we shall not dwell further on it here.

It has been already remarked that chlorosis is usually characterized by obstinate constipation, and that it predisposes to collections in the colon and rectum of indurated feces, enormous masses of which are sometimes thus accumulated. As the bowels will sometimes act whilst these still remain lodged in the cells of the colon, the accumulation may easily be overlooked; we must, therefore, be careful that this evil, which interferes with and prevents all successful treatment, may not elude our vigilance. I saw lately a well-marked case of chlorosis in which a large, hard mass of fecal matter occupied and distended the pouch of the rectum; it was so firmly lodged as to require mechanical means to effect its removal.

Amongst the less frequent, but by no means uncommon complications of chlorosis, serous effusions demand especial notice. The tendency of this affection, as contra-distin-

guished from hæmorrhage, is to give rise to exudations of serum, whilst exudations of blood are comparatively rare. These effusions, which are common both to chlorosis and anæmia, may be poured out either into the serous cavities, or into the cells of the subcutaneous cellular tissue. Whenever the blood, from any cause, is reduced to an extreme degree of attenuation, we have much reason to apprehend such a catastrophe.

The following case illustrates chlorotic anasarca :—

A married lady, aged 19, had been for several months labouring under gradually-increasing chlorosis. Previously to her marriage she had looked pale and delicate, and had lost much of her accustomed health, strength, and spirits. Marriage, it had been expected, would have had a salutary effect ; and for a short time, whilst travelling, her health appeared to improve. She again, however, became languid, depressed, and pallid, and at length universally anasarcons. In this state I first saw her. She was confined to bed ; her debility so great that it was with difficulty she could be moved ; and her whole person was enormously distended. Her face was œdematous, but less so than every other part of her body ; a copious serous effusion had taken place universally into the cells of the subcutaneous cellular tissue. Her pulse was incalculably rapid, and so feeble that it was with difficulty it could be felt at the wrist. The heart's impulses were languid in the extreme, but unaccompanied by any abnormal sound. The respiration was permanently and greatly accelerated. The alvine excretions were liquid and of light yellow colour ; she was so weak and helpless that she could not be placed on the bed-pan. The urine

was light-coloured, not copious, of low specific gravity, but without a trace of albumen. A variety of treatment, both tonic and diuretic, had been in vain employed, and all hope of recovery abandoned; and yet there was no evidence of organic disease; the sole change which had taken place was in the blood itself. From the appearance of the skin, and from the slightrness of the pressure necessary to displace the fluid, it was evident that the effusion was of the thinnest nature. Under these circumstances I thought this an unusually favourable case for acupuncture. The operation was immediately performed; a great number of punctures were made, from which thin serum flowed copiously, and much care was taken to keep the patient dry and warm. Common salt was dissolved in water, to which the muriated tincture of iron was added; and of this as much was given, at regular intervals, as the stomach could easily endure, together with farinaceous nutriment and wine. On the next day the patient's condition was in every respect an improved one; the anasarca was diminished, the pulse more distinct and less frequent, the respiration less hurried, and the urine much increased in quantity. On the second day many additional punctures were made, and on the third day they were again repeated. After this day the greatly increased flow of urine, and the marked diminution of every urgent symptom, rendered it unnecessary to reiterate the operation. She gradually—I may truly say rapidly—recovered; her restoration was perfect; she became vigorous and even florid; she has borne several children; and many years have since elapsed, leaving her in the enjoyment of uninterrupted health.

The next case I shall record is one of great interest, a case of extreme anasarca, the result of anæmia, and without organic lesion, occurring in an hospital-patient. He was about thirty years of age, had never lived intemperately, and was superior to the generality of hospital-patients in manner and education. His life had been spent in an office, at the desk, the nature of his occupations permitting him to take very little exercise. By long continued and frequently profuse bleeding from the hæmorrhoidal vessels, he was reduced to a state of complete anæmia, and, owing to extreme debility, had been compelled to give up his situation as a clerk. When admitted into hospital he was universally anasarcaous. The first signs of œdema manifested themselves in the lower extremities and face; his respiration was hurried; his pulse feeble and rapid; no murmur accompanied the cardiac movements, nor was there any auricular evidence of deposition in the pulmonary cells. The urine was scanty, low in density, and not albuminous. He remained for several days in hospital, and the symptoms not being in the least degree submissive to treatment, it was determined to give exit to the fluid by acupuncturation. Numerous punctures were made, during several successive days, in different parts of the body; the thin serum flowed freely; the anasarea subsided; the secretions became abundant; and the treatment ultimately issued in a complete restoration to health. His diet was gradually rendered more and more nutritious; he was allowed wine and malt liquor; and after the operations, his medicines were iron and ammonia. I cannot avoid recording an emphatic expression used by this man.



After having been twice acupunctured, and when the serum was flowing profusely, I asked him how he felt? His reply was : "Sir, I feel greatly relieved : when I was a boy, I wept from my eyes ; now that I am a man, I weep from my whole body."

These cases illustrate the circumstances under which the operation of acupuncturation may be most advantageously employed ; indeed the only circumstances which give to it a permanent value. It may often be practised usefully as a palliative : rarely, however, is it a curative measure. In dropsy from organic disease it removes the tension, and enables the blood to circulate more freely, so that the medicines may act, and the effused fluid be absorbed ; but the organic disease remains, and the dropsy returns. In the foregoing cases there was no organic lesion, either cardiac, pulmonary, hepatic, splenic, or renal. The tension being removed, and the medicines enabled to produce their full effect, the serous effusion was absorbed, the constitution invigorated, the quality of the blood improved, and the cure rendered perfect. Far otherwise is it in those vastly more numerous cases of dropsy resulting from morbid change and deposition in organs essential to life ; in many of these, acupuncture is an useful adjuvant in the treatment, but it cannot remove the cause of the effusion.

Trifling as this operation is, I have seen it followed by consequences the most disastrous—erysipelas and gangrene. In advanced cases of dropsy, when the blood is much altered—all but disorganized—it is dangerous to puncture the skin. I have also seen cases in which, from the perpetual oozing of cold serum, the broken-down state of the

health and of the blood, each puncture has been followed by a large and foul ulcer. In other instances of hopeless dropsy, even though the patient escape these grave consequences of acupuncture, the limbs have been kept so constantly wet and cold as greatly to distress the patient and aggravate his sufferings. It requires, then, observation and judgment to distinguish the cases in which this remedy may be safely and successfully employed. It may be here remarked that the more limpid and less dense the effusion, the more favourable is the case for acupuncture. I have observed many cases of anasarca resulting from organic renal disease, wherein it required strong pressure to produce a pit or dimple; nay, more, the limbs have been so rigid as to render the joints immoveable, such has been the density and solidity of the matter which occupied the subcutaneous cellular tissue. I have preserved the records of several interesting facts to illustrate the various degrees of density of the fluid effused in the different forms of anasarca swelling; which on some future suitable occasion I hope to bring before the profession.

I saw, some years ago, in consultation with Sir Philip Crampton, a very remarkable case of anæmic dropsy; the patient was about thirty-five years of age; he had been reduced by long-continued and profuse hæmorrhoidal bleeding to a state of extreme anæmia. The prominent symptoms were death-like pallor, excessive debility, languor, constant dyspnœa, occasional orthopnœa, bellows-murmur of the heart and arteries, universal anasarca, and peritoneal effusion. Sir P. Crampton, by an operation, put an end to the sanguinous exudation, whereupon a rally took place;

and then tonics, diuretics, moderate stimuli, and nutritious diet, completed the cure.

Formerly, cases of chlorosis characterized by unusual disturbance of the cardiac action were treated as genuine organic diseases of the heart. Repeatedly, in the early part of my professional life, I have witnessed the pernicious effects of this mistake. I have seen patients who needed iron, solid nutritious food, and the open air, treated by weeks or months of recumbency, digitalis, repeated bleedings, and abstemious diet. Fatal in its results must such treatment be. At the present day mistakes of this nature are of exceedingly rare occurrence ; cases, however, do occur, the diagnosis of which is involved in some obscurity. (Edema of the lower extremities, co-existing with orthopnoea, startings in a fright from sleep, violent palpitations and systolic murmurs, are symptoms calculated to render the diagnosis obscure and difficult.

The following case of chlorotic anasarca, which fell under my notice many years ago, made a deep and lasting impression on my mind. It was that of a young lady, who, without any palpable or discoverable cause, had gradually fallen into a state of extreme chlorosis, her debility being such that she was confined to bed. She was unable to remain long in the recumbent position ; she lay with her chest and shoulders elevated—the only position in which, with comparative ease, she could breathe ; she was seized frequently with paroxysms of dyspnoea and palpitation ; the lower extremities were much swollen, and the œdema extended to the hips. When I saw her, she was pallid and prostrated<sup>7</sup> in the extreme ; her pulse feeble, rapid, and un-

equal; a bellows-sound accompanied each systole of the heart, and a similar murmur was heard along the line of the large arterial tubes. I could not discover any venous hum or sound. In the lower extremities a very slight degree of pressure produced a deep pitting. The occasion of my visit was to determine whether, being provided with a bed in a travelling carriage, she might be removed from this city to the residence of her parents in the south of England. Her case was looked upon and had been treated as one of hopeless organic disease of the heart. A carriage, with a well-constructed bed, was provided; she was taken out a few times for a short drive, which she bore well. Her journey homewards was then determined upon. Each day's travelling was followed by a manifest abatement of the most urgent symptoms: the good derived from travelling was so obvious that it was persevered in. She continued to travel for a long time, and returned quite a renovated person. I saw her years afterwards full of health and spirits.

I was not then as well aware as I now am, of the extent to which an extremely attenuated state of the blood is capable of disturbing the cardiac and pulmonary functions, so as even to simulate heart disease. Nor was I fully acquainted with that form of dropsy or anasarca, which may appropriately be termed anæmic anasarca; a variety of dropsy usually looked upon as resulting merely from debility, but in reality dependent upon the remarkable attenuation in the quality of the blood which takes place in the advanced stage of chlorosis and anæmia. It is distinct, and easily distinguishable from the anasarca which accom-

panies Bright's disease of the kidney ; it holds a separate place, and may be placed under the head of chlorotic and anæmic dropsy. A dropsical effusion frequently takes place in the last stage of purpura hæmorrhagica ; this too depends upon an alteration in the constituent elements of the blood,—an alteration, however, in some respects, of a nature different from that which characterizes chlorosis.

Chlorosis and anæmia, as we have said, predispose to effusions into serous cavities. This may take place in the cavities of the brain. A boy five years of age had been reduced to a state of anæmia by long-continued, wasting fever, and was anasaruous in the lower extremities. Whilst in this state, though apparently improving in general health, he became gradually, and at length profoundly, comatose. It was ascertained too, on examination, that there was complete hemiplegia of the left side. He was treated by blisters and mercurial inunction ; gradually the coma and paralysis disappeared ; as these symptoms subsided so likewise did the anasarca of the lower extremities ; and the child, though still pallid and delicate, is now daily improving in health and strength, and exhibits no remaining sign of cerebral disease or dropsical effusion.

Miss B., eighteen years of age, having for several weeks manifested all the essential symptoms of genuine chlorosis, was seized with pain, neither severe nor of long continuation, in the left side, over the cardiac region. She soon became so breathless and weak that I was hastily summoned to see her. I found her scarcely able to breathe, pulseless, and to an extreme degree restless and agitated. The heart was displaced, its hurried and irregular impulses

being perceptible only on the right of the median line ; and the whole of the left side of the thorax was perfectly dull on percussion and destitute of respiratory murmur. The respiration of the right lung was loudly puerile. Copious vesications were rapidly produced by the free and extended application of acetum lyttæ ; after which blisters were laid on the skin ; sinapisms were placed on the feet and calves of the legs ; and carbonate of ammonia with spirit of nitrous æther given internally. By these means some mitigation of the urgently suffocative symptoms was speedily effected. It had been my determination, had the patient not been quickly relieved, to have had the operation of paracentesis at once performed. Two hours, however, had not elapsed before a marked abatement of the suffocation rendered such a step, at the moment, unnecessary. Mercury was then rubbed in largely, and also given internally ; digitalis in infusion was likewise taken. The combined action of mercury and digitalis was most remarkable and gratifying ; after an interval of some hours the kidneys began to secrete, and so abundant was the diuresis, that the rapidity of the absorption was only equalled by the suddenness of the serous deposition. By degrees the expansion of the compressed lung became more and more evident, in the restoration and extension of the respiratory murmur, and the gradual replacement of the heart, affording decisive evidence of the favourable progress of absorption. At the end of the third day from my first visit, the heart had nearly returned to its normal position ; and the lung, throughout the greater part of the left side of the thorax, had audibly resumed its function. The re-

storation to health was ultimately complete. In this case it was the sudden change in the condition of the organs—the rapid compression of the lung and displacement of the heart—which gave rise to the suffocative sensations and the imminent danger. Had these changes occurred more slowly, the system would have been gradually accommodated to them, and the immediate danger would have been less pressing. Cases of this kind may arise in which nothing but an early recourse to paracentesis can save the patient's life. This young lady exhibited every sign of constitutional struma.

It may be well here to observe that mercury in this disease must be administered with extreme circumspection. I remember having seen, several years ago, in consultation, a young lady about eighteen years of age, who had been for months previously in the chlorotic state, and who had become universally anasarcaous. She was deadly pale and cold, no artificial appliances availed to maintain warmth in the extremities; the pulse was rapid and very feeble; there was, however, no discoverable evidence of organic lesion. She had been treated before I saw her with calomel in full doses, the result of which was sloughing of the gums and a large sloughing perforation of one cheek. She fell a victim to mercury administered with too unsparing a hand to one long labouring under chlorosis.

I have seen several cases of pleuritic effusion after long-continued fever, where the blood was reduced, apparently at least, to the abnormal state characteristic of chlorosis. I say apparently, because, not having had an opportunity of examining the blood after a long fever, or after profuse



hæmorrhage, I cannot venture to affirm their absolute identity. The similarity, at least, between the two states, is very striking.

I shall give briefly the following case, as an example of the form of pleuritic effusion I have met with in several instances after a tedious fever. A young college student, convalescent after a protracted fever, was observed to alter in his looks, not to improve as he had done, and to breathe more quickly. Not having seen him for several days, I was requested to visit him. I found him in a semi-erect position, inclined towards the left side; he had not experienced any painful sensation, but he felt more languid and weak than he had done for many days since the subsidence of the fever, and both his breathing and pulse were exceedingly rapid. He enjoyed little sleep, and that little was disturbed and uneasy. On examining the chest it was found to be dull on percussion over the left side, throughout its whole extent, and the respiratory murmur was inaudible. The heart was displaced: its impulse being inaudible, with visible motion of the integuments, three inches to the right of the median line. The left side of the thorax to the eye appeared much dilated, though but a small difference was detected by direct measurement; and the slightest exertion increased excessively the already existing dyspnœa. The effusion was, I presume, in this case, serous; it yielded gradually to mercurial inunction, and frequently repeated blisters. Other cases of effusion into either side of the thorax after fever, and several such after severe influenza, have fallen under my observation. In all these cases, long continued febrile action had reduced the

frame and impoverished the blood ; and it is exactly under such circumstances that a slight inflammation of the pleura is followed by copious serous exudation. These are cases in which, at a certain stage or period of the effusion, the tincture of the muriate of iron may be given with manifest advantage. Profuse, long-continued, and often-repeated uterine hæmorrhage also favours serous effusions. Albuminuria likewise produces pallor, attenuated blood, and tendency to serous effusions. In fact, any disease which deprives the blood of its due proportion of red corpuscles, may induce a state of anæmia, and predispose to effusions of serum.

Malignant diseases and tumours, either with or without hæmorrhage, also produce a perfectly anæmic state, and give rise to anasarca. The condition of the blood in some (particularly the hæmorrhagic) cases of anæmia, appears to resemble, perhaps to be identical with, that of the blood in the advanced stages of certain fevers, which, towards their close, are characterised by passive hæmorrhages ; the blood being so thinned and broken down as to ooze, often copiously, from mucous surfaces. No symptom in the advanced stage of fever can be much more fatal than this.

It occasionally happens that, when the patient is reduced to a state of extreme anæmia, not only does a serous effusion take place, but also a tubercular deposition.

Master C., æt 11, an ardent, energetic child ; rather precocious in mental manifestations and feeling, and abounding in animal spirits ; of florid complexion, plump, and well nourished ; had been, previously to my first visit, treated for strumous tumefaction of the cervical glands.

I found him vomiting violently: the vomiting, though mitigated by treatment, continued in a distressing and exhausting degree for three days; it then abruptly ceased and he appeared better. On the following day he was deeply and universally jaundiced, with some fever, thirst, and epigastric tenderness, but was able to retain in the stomach light farinaceous nutriment. The inflammation had obviously departed from the gastric, and had invaded the duodenal mucous membrane, and thus obstructing the orifice of the biliary duct, had caused jaundice. He continued in this state for many days; the yellow tinge then slowly and gradually vanished. During the whole of this period very little nourishment had been received into the system. He was now, however, apparently convalescent, though greatly reduced in flesh, strength, and animal spirits. After the lapse of a few days, a slight rigor ushered in fever; and this was soon followed by an outbreak of erythema nodosum on both lower extremities. The patches were prominent, hot, painful, red, and irregularly circumscribed; they were of various dimensions, some being equal in size to a half-crown piece; and for three weeks they continued to appear in successive crops, some fading away, whilst fresh ones were coming out. Whilst the eruption lasted there was present, though varying in degree, diurnal fever of the remittent type. When convalescence was nearly re-established, the little patient, now very bloodless, pallid, and emaciated, began to complain of slight pains, not persistent below the inferior margin of the left ribs. These, at first, attracted but little attention; at length the pain became more fixed and permanent,

higher up under the ribs on the left side, and much augmented by a deep inspiration ; an effusion commencing below gradually extended itself upwards, till at length the dulness on percussion was universal, and the extinction of respiratory murmur complete. The heart was slightly displaced, and the thoracic dilatation sufficient to obliterate the muscular movements, and the depressions of the intercostal spaces. After a long period of dyspnœa, often amounting to orthopnœa, accompanied with harassing dry cough, sleeplessness, agitation, and general distress—painful even to witness—the chest fell in and became palpably contracted. Over a considerable space of the superior portion of the left lung, both anteriorly and posteriorly, respiration was re-established. The respiratory murmur, when first heard, was mingled with a small crepitus ; by degrees the signs, local and constitutional, of tubercular disease, chiefly of the left lung, became more unequivocal, until no doubt could be entertained of the nature of the disease which brought this little boy to an early tomb. Prolonged wasting fever, and imperfect nutrition, rendered him exsanguineous ; in this state he was attacked by pleuritis with effusion ; nor was this all : coeval with the serous effusion was the deposition of tubercular matter in the parenchyma of the lungs. This disastrous event, masked at first by the effusion, but rendered subsequently manifest on the absorption of the effused fluid, stamped upon a case, otherwise not hopeless, an inevitably fatal character. Frequently during the progress of his illness, and on previous occasions, I had carefully examined the chest ; and in no instance had I met with a more perfect example of sound

lungs ; of total exemption from any one sign, either local or constitutional, of preexisting crude or latent tubercle ; so that no doubt was left upon my mind that the plenritic effusion and the tubercular deposition were contemporaneous. I have seen and carefully observed many such cases, some of true chlorosis, others of superinduced anæmia, marked by the combined events of effusion into the sac of the pleura, and of tubercular deposition in the substance of the lung. In cases of this description I have known the operation of paracentesis proposed, and in one instance performed, when a careful analysis of the case would have rendered it certain, that the only possible result must be the infliction of a needless wound, with perchance a few days' prolongation of a miserable and suffering existence. On the subject of pleuritic effusions, some with, and others without tubercles in the lungs, I shall have occasion hereafter more fully to speak. I have not long since met with two cases of the double event alluded to, in young married women reduced to a state of extreme anæmia and debility by superabundant and too long continued lactation ; they both terminated fatally, evincing before death indubitable signs of tubercular cavities ; the local signs being most evidently marked on that side of the chest which had been the seat of pleuritic effusion.

In the foregoing remarks I have classed together cases of chlorosis and of anæmia. Between these two states there is a striking analogy ; they both lead to the same pathological results ; still, as I have before observed, they are not proved to be identical. Hæmorrhage, by no means unusual in anæmia, is not frequent in chlorosis. In cases of

anæmia, serous and sanguineous effusions may and sometimes do occur simultaneously ; whilst anasarca is present, if the patient be attacked with congestion or inflammation of the brain, lungs, or any other organ, an effusion of blood, either circumscribed or diffused, may take place. A frequent cause of anæmia is hæmorrhage ; but the hæmorrhagic action often continues, though the patient be already anasarcaous and reduced to an extreme state of anæmia. Thus we occasionally meet with anæmia, hæmorrhage, and anasarca coexistent.

In chlorosis cutaneous eruptions are comparatively rare ; in this respect the contrast with the hæmorrhagic diathesis is not a little remarkable. Upon the intimate connexion which exists between many varieties of skin disease and the hæmorrhagic condition, I shall hereafter have occasion, at some length, to dwell. There are on record, and I have, myself, met with, many instances of the alternation of cutaneous diseases, particularly of the eczematous kind, with hæmoptysis. In these cases, so surely as the exuding disease of the skin is either cured by art or spontaneously subsides, as certainly does the hæmoptysis return. In the hæmorrhagic condition, the superficial capillary system is often loaded with blood rich in red corpuscles, and various cutaneous eruptions are frequent ; in the chlorotic state, this system receives comparatively few red corpuscles, and the skin is generally exempt from irritation and disease. To this general rule the exceptions are not numerous. In the treatment of many diseases of the skin this is a distinction of some practical importance ; it frequently assists in pointing out the way which leads to the most



effectual method of treatment. I have observed, in some cases, the outbreak of eruptions, particularly on the face, at that period when, the chlorosis having subsided, the opposite one of redness, flushing, and augmented mental and muscular vigour have been established.

Chlorosis has been traced to many sources ; such as deep, long-continued mental emotions and sufferings ; suppressed passions ; sexual excesses and perversions ; sudden cessation of the catamenia ; profuse leucorrhœa ; damp localities ; impure air ; transition from a rural to a city life ; scanty and innutritious food ; impressions of cold ; sedentary occupations, and insufficient muscular exercise ; copious and protracted hæmorrhage ; and wasting and prolonged fevers. In short, its origin has been attributed to all causes capable of deteriorating the blood, depriving it of its due proportion of red corpuscles, and producing the state of anæmia. These, however, one and all, do but predispose to the disease ; there are required in addition, a particular period of life and a particular condition of constitution, to produce it. Amongst the predisposing causes briefly enumerated, there is one which claims more particular notice ; that to which I allude is the instinct of attachment, or as it is termed by the phrenologists, adhesiveness. Amongst the moral and educated portion of the female sex, I have noted many instances of the all prevailing influence of this powerful instinct. It is implanted in the female mind more deeply than in the male. Besides, the busy and competing scenes of active life, in professional, laborious, scientific, or pleasurable pursuits, so distract the thoughts and attention of men, as to pre-



vent the one prevailing thought from being constantly present before the mind. Not so with woman ;—her lot in life is differently cast. The earnest and often necessary pursuits of men form generally but a fragment of female existence ; and in the young, modest, retiring female there is nothing to break the current of her thoughts, or to interfere with the paramount influence of this strong, and, I will say, beautiful instinct. But, if it be the source of some of the most touching traits in the female character, it is often the source of unhappiness, ruined health, and premature dissolution. The attachment of the young female to the object of her affections is, of all mental influences, the most powerful ; so powerful, as often to absorb and set at nought all other considerations. It is the sudden—often rude—disruption of a long cherished and, perhaps, concealed attachment, which undermines the health, prostrates the vital actions, and lays the foundation of hopeless and consuming disease. Too much stress is generally laid upon ungratified sexual instinct ; it has its influence, and, in some minds, a powerful one ; still, as far as my observation has reached, it is much frequently the cause of injured health than a strong attachment abruptly broken. To this, as a starting point, I have been able to trace many cases of chlorosis ; and when, in such instances, the strumous diathesis prevails, there are strong grounds to apprehend its ultimate issue in phthisis.

Occasionally I have observed chlorosis to have arisen as it were, spontaneously, and without the intervention of any one of the usually assigned causes ; and that too within a very short period of time. I have noted cases in

which the transition from a state of apparent health to that of fully formed chlorosis, has not occupied more than a week or ten days. Such a disease, thus rapidly established, and without any palpable cause, strikes one as a very singular phenomenon.

Equally remarkable is the slow and gradual development of the disease in young persons not exposed to any influence whatever, to which the disturbance of the health could be referred. When a cause has been in operation, which we can seize upon to account for the altered aspect and condition of the patient, our wonder is less excited ; but when, on the minutest scrutiny, we are unable to discover any cause capable of giving rise to the disease, we are naturally led to inquire, how can this be ? I have seen the disease to arise in young persons placed in circumstances the most favourable and conducive to health ; and have been unable, after the most careful investigation, to discover any cause, either in the habits of life, or the affections of the mind, sufficient to account for the great change which had been wrought, the remarkable depression of the vital energies, and the totally altered colour and complexion. Can we throw any light upon a subject involved in so much obscurity ? The result of many observations which I have made is, that the source of the morbid action is struma. The imperfection of organization, hereditary or acquired, usually termed struma, is the source of many constitutional as well as local evils. Amongst the former is chlorosis.

Of those affected with this disease, a very large proportion is strumous. In no instance have I met with a case

of spontaneous chlorosis, except in a member of a family, upon each of whom the characteristics of the strumous diathesis have been unequivocally impressed. Though this does not explain all, it gives, at least, a clue to the interpretation. We shall, however, postpone any further remarks on this part of the subject, as they come more properly under the consideration of the signs and evidences of the strumous diathesis.

We cannot dismiss the subject under consideration without making some allusion to what may be termed the essential treatment, without instituting the important inquiry,—do the resources of art furnish us with any substance, mineral or vegetable, capable of restoring to the blood its normal density, and its due proportion of red corpuscles? The answer to this question points at once to a mineral, the efficacy of which is as remarkable as that of any other medicine in the whole catalogue of remedies; neither do bark, nor mercury, nor wine, nor bleeding, nor opium, nor antimony, even when most judiciously administered, exhibit effects more manifestly therapeutic than iron does in this disease; nor does iron bring more of wealth to the inhabitants of the country from the bowels of whose earth this valuable ore is dug up, than it does of richness to the blood of the chlorotic patient. It is remarkable, too, how universally diffused are chalybeate springs, as if it were the design of Nature that iron in abundance should be mingled with the blood, and that it should be incorporated largely with vegetable matter. Whether the preparations of iron produce their effects directly by augmenting the proportion of red corpuscles in the blood, or indirectly

by invigorating and improving the digestive function, still there is no medicine the curative properties of which are more fully established. The probability is, that it acts usefully in both ways. Iron, then, judiciously administered, is a most valuable and important therapeutic agent. Nor is its salutary action restricted to chlorosis ; there are many other pathological conditions of the animal economy over which it possesses the same power in improving the blood, and thus restoring tone to the nerves and vigour to the muscles. Often in chlorotic patients have I watched the change wrought in the system from day to day under the vivifying influence of this remedy, and most striking, and sometimes rapid, have been its health-restoring effects. Were all cases of chlorosis simple and unmixed—were it not liable to the various complications to which we have already alluded, then, indeed, the treatment were easy, and the cure certain. But it is not always the case : various co-existing affections complicate the treatment, and even forbid for a time the employment of chalybeates ; besides, there are individual constitutions so intolerant of iron, so peculiarly affected by it, that we are compelled altogether to forego the administration of this useful remedy. We occasionally, also, meet with patients who cannot endure it, except in quantities too small to effect a cure ; we are, in consequence, sometimes compelled by necessity to look around for a substitute, and the most efficient one which I have been enabled to discover is bismuth. Under the influence of this metal I have seen gradual and satisfactory recoveries take place in persons whose idiosyncrasy forbade the use of iron. I must not omit to mention the marked

utility of cinchona and its salts, and of the carbonate of ammonia. Many bitter vegetable tonics, also, are productive of benefit ; but I place more reliance on bismuth, carbonate of ammonia, and the salts of Peruvian bark, than on any of the other substitutes for iron which are usually prescribed. The injurious effects produced by iron are throbbing and pulsation of the vessels of the head, headach, vertigo, and sometimes epistaxis. In one case which lately fell under my notice it produced all the symptoms of intoxication ; in another, though given in moderate doses, it caused a delirium which did not subside until the third day. Its tendency is also to produce acceleration of the pulse, heat of skin, and febrile excitement. In a few instances I have observed a well-characterized periodic fever to have resulted from its excessive administration.

There is another ill effect which iron is apt to occasion, —constipation of the bowels ; this itself is one of the most uniform symptoms of chlorosis ; it is, however, augmented by the ferruginous treatment. Hence arises the important practical rule of thoroughly evacuating the bowels, and of completely allaying intestinal irritation, as a preliminary step to the administration of iron ; and of combining with it, during the whole progress of the treatment, such mild aperients as are best suited to the individual constitution, and best calculated to maintain a sufficient and regular action of the bowels.

The mode of administering iron is not unimportant. There is none superior to that of drinking the natural waters at a chalybeate spa ; its distance enhances its value, because

it involves the necessity of travelling, of change of air, climate, scenery, and associations ; and the more the patient enjoys travelling, the more exhilarating will it be to the spirits, and the more effective will the remedy prove. Of all the distant spas, I know not one more generally efficacious than the Langen-Schwalbach, in Nassau. There are many, however, for whom the weakest of these springs is too powerful ; for such, a water less strongly impregnated with the mineral should be selected. Domestic or pecuniary circumstances, and oftentimes the actual condition of the patient, will preclude the adoption of this remedy ; so that, for the many, the treatment must be conducted without removal from the paternal roof. To the labours of the chemist we are indebted for several excellent new forms in which this mineral may be exhibited ; nor is this without its value, for the preparation which agrees best with one constitution does not accord equally well with another. There is also considerable variety in their effects ; the muriated tincture, for example, produces on the stomach, bowels, and kidneys, an action far different from that of the subcarbonate or the sulphate ; and so of the other preparations. Besides, in a disease which generally requires for its cure a prolonged course, it is no small advantage both to vary the preparation, and to be enabled to administer it in a palatable form. The acetated tincture of iron, a formula for which we are indebted to the late Dr. Percival, of this city, is, when carefully prepared and well preserved, a valuable medicine ; given in asses' milk, or in cow's milk divested of its curd, it may be easily taken, and long persevered in.



The wine of iron, an old preparation, is one sometimes to be preferred, and may be given in the same manner as the acetated tincture. It is mild in its action, and very suitable for children. The wine of iron and rhubarb is, in many instances, a compound productive of excellent effects. The combinations of iron with ammonia are extremely useful; ammonia forms an important adjunct in the treatment of many cases of this disease, particularly those which are characterized by distressing coldness of the extremities. Mr. Bewley's effervescing chalybeate is a very eligible preparation, and applicable to many cases; impregnated as it is with fixed air, it is grateful both to the palate and to the stomach. The following formula I have also found suitable to many cases; water of the citrate of ammonia, three drachms; water, six drachms; syrup, a drachm; citrate of iron and quinine, from one to three grains:—mix, for a draught to be taken twice or thrice daily.

In both chlorosis and anaemia, I have observed that the treatment has been rendered more certainly, and more speedily effective, by administering iron in conjunction with Peruvian bark and the salts derived from it. Hence arises the value of the triple salt just named; hence also the efficacy of the aromatic iron mixture, which, when united in equal proportions with Griffith's mixture, constitutes a very useful compound. I have often prescribed—and I think with excellent results—bark, iron, and ammonia, conjointly in the following manner:—Decoction of Peruvian bark, ten drachms; tincture of bitter orange peel, one drachm; syrup of ginger, one drachm; bicar-



bonate of ammonia, fifteen grains. Mix. To be taken two, three, or four times daily, in effervescence, with half an ounce of lemon-juice. The compound iron pill, so prepared as to insure its solubility in the stomach, and repeated in sufficient doses three or four times daily, with the addition of about half a grain of sulphate of quinine—which, though an unchemical formula, increases much the efficacy of the compound—forms one of the most generally and certainly effective modes of administering iron. In pill it is less likely to produce headache, than in solution ; and for those who can with facility swallow pills, this mode of introducing iron into the system is at once more easy, and admits, without causing disgust, of being longer continued. The saccharine proto-carbonate, diffused in a vegetable bitter, is also an excellent chalybeate. In cases which require a mild aperient, in co-operation with the chalybeate, I have found the following powders particularly useful :—Bicarbonate of soda, fifteen grains ; tartaric acid, ten grains ; dried sulphate of iron, from one to five grains ; powdered white sugar, half a drachm. This powder should be kept in a dry place, dissolved in a wine-glassful of water, and swallowed whilst effervescing. These powders I have been in the habit of prescribing for the last ten years ; they were first prepared for me by the late Mr. Fergusson of Kildare-street. I saw lately in a periodical a good formula for this powder, and very similar to the one now given. As a general rule—to which, however, there are some exceptions—iron should be given in small doses. Some of the natural chalybeate springs, which possess remarkable restorative properties, hold extremely

minute quantities of iron in solution—a hint derived from nature, which we may often advantageously adopt.

The effect of iron in changing the colour of the fæces is so well known that it is unnecessary to dwell upon it; it is also capable of producing an alteration in the aspect and properties of the urine. In proportion as the amount of red corpuscles in the blood is increased by the use of iron, change of air, or other remedies of a tonic nature, so is the quantity of urea and uric acid in the urine augmented. If the chalybeate treatment be too long persevered in, it may lead to and establish a condition of the system directly the reverse of that for which it was originally prescribed. Some time since I saw a young lady, whom, several months previously, I had treated for distinctly characterized and extreme chlorosis. In the interim she had gone to the country, had travelled, and had persevered in the chalybeate treatment for many weeks after the chlorotic symptoms had disappeared. When I saw her, I found her in a totally opposite state, complaining of flushings, headache, red pimples, and a deeply florid colour of the face. Such were the symptoms, which now troubled her far more than her former death-like pallor, and for which she more anxiously sought a remedy. The transition, in her case, was striking: she had been chlorotic, she was now hyperæmic; the red corpuscles, which had been minus, were now become plus. Of this transition I have met with several well-marked instances. A change having taken place in the condition of the blood, the treatment should likewise be changed, since the remedies necessary to ameliorate the condition of the blood in chlorosis, if too long persevered

in, may originate an opposite and equally injurious state of the system. The truth of this remark is exemplified in those individuals who, by profuse hæmorrhage, are reduced to the chlorotic state. In many of these instances (in females, from uterine hæmorrhage; in males from long-continued hæmorrhoidal bleeding; and in both, from profuse epistaxis) the blood is so thinned that iron becomes the efficient remedy; but if continued too long, hæmorrhage is reproduced.

Having dwelt upon the effects of iron, and upon some of the formulæ for its administration, the inquiry suggests itself, do we possess any medicine capable of diminishing the amount of red corpuscles, when in excess, of equal efficacy with iron (whatever be its mode of action) in augmenting their quantity when deficient? Can we, in fact, take away from the richness of the blood with the same certainty that we can add to it? Obviously by bleeding, abstemiousness, and evacuations, the whole mass of the blood may be attenuated and impoverished: by these means, however, the blood is not only deprived of its red corpuscles, but all its constituents are wasted, and the object of diminishing the proportion of red corpuscles alone is not attained. Now this is a very interesting inquiry, and merits the fullest consideration. I shall merely touch upon it at present, and reserve more extended observations respecting it until we shall have spoken of the various forms of hæmorrhage. I cannot, however, avoid noticing some remarks which have been made on this subject by Dr. Freke, the clinical clerk to our medical wards, to whom I am indebted for much valuable aid in our researches in

Steevens' Hospital, and whose accurate and extensive knowledge of organic chemistry is of great value in the investigation of the phenomena of disease, and its treatment.

In the year 1843, Dr. Freke published in the *Medical Times* the following inquiries:—"Would it not, then, be of importance if any means could be suggested whereby the red globules alone might be diminished, while the other constituents of the blood remained unaffected? Could this be accomplished by the hydro-sulphuret of ammonia?" He then proceeds to express his belief in the twofold possibility that such end might be effected, and that the hydro-sulphuret of ammonia might be possessed of the power of depriving the red globules of an essential constituent, "appropriating to itself a portion of that iron which would otherwise have contributed to the formation of the red globules." His grounds for such belief were, conjointly, the known affinity between iron and sulphur, the observed effects of hydro-sulphuret of ammonia on the economy, and the supposed function of iron in the globules. In the last number of the same periodical appeared an article, headed "Researches on the Human Blood," by M. Bonnet, of Lyons, the concluding paragraph of which is as follows:—"M. Bonnet has further remarked that the hydro-sulphuret of ammonia destroys the globules completely, and deprives the blood of the faculty of assuming the bright scarlet colour of arterialization." Thus the suggestion put forward by Dr. Freke three years ago has been in a measure confirmed by the recent researches of M. Bonnet. This important practical inquiry requires further investigation; it may lead to valuable results. Whether hydro-sulphuret

of ammonia acts primarily on the nervous system, as a sedative poison, or its direct effect be to dearterialize the blood, still, as a medicine, given in well-regulated doses, it may yet be found to possess curative properties.

In the second number of the *Dublin Medical Journal*, May, 1832, a case of disease of the heart was published, at my request, by my late friend Dr. Newton, in which the hydro-sulphuret of ammonia having been administered, the heart's action was reduced to forty-eight in the minute, with an abatement of all the urgent symptoms. In other cases, too, the influence of this medicine upon the heart and pulse were very remarkable. I was led to adopt this practice by the accounts given of it by Dr. Rollo, in his work on "Diabetes." I may further observe, that I have been for many years in the habit of prescribing the hydro-sulphuret of lime in the treatment of diseases of the skin. I have employed it internally, in doses of from ten to thirty drops, sufficiently diluted; and externally, in the form of vapour, of lotion, and of liniment. I have reason to speak very favourably of its effects, more especially in those cases in which, from appearances at least, we should be induced to expect an excess of the red corpuscles. Might not its action be similar to that of the hydro-sulphuret of ammonia?—and might not this investigation, if fully carried out, throw a clearer light upon the manner in which the sulphureous waters of Lucan, Harrogate, Aix-la-Chapelle, &c., and the various preparations of sulphur, influence the animal economy. The inquiry is one of interest, and involves the consideration of the treatment of a large proportion of cutaneous affections.

Before dismissing the subject of chlorosis we must notice

the opinion entertained by some, that there is a close relation between the functions of the great sympathetic nerve and the symptoms of chlorosis. There are, undoubtedly, strong grounds for the opinion. The ganglionic system of nerves, termed the sympathetic, exercises so paramount an influence over digestion, absorption, deposition, secretion, circulation, respiration, and reproduction, that we cannot but conclude that many of the phenomena of chlorosis are traceable to a primary derangement in the function of this important and widely distributed nerve. I find that Dr. Hill has made some remarks on this subject, and written a sketch of the anatomy and functions of the sympathetic nerve, and its intimate connexion with the essential symptoms of chlorosis, which, when completed, shall be laid before the profession. We have noted, and have on record, a large number of cases, both of chlorosis and of hæmorrhage, in which the blood has been carefully examined; these, in a condensed form, shall be given after the subject of hæmorrhage shall have been treated of.

To Dr. Hill I am deeply indebted for his energetic co-operation in all these investigations: without the aid of his talents, industry, and perseverance, I could never have prosecuted these inquiries.

It is to be regretted that hitherto our investigations have been restricted to venous blood, the opportunities of examining arterial blood being rare indeed.

In the use I have made of the term *anæmia*, I wish it to be understood that it is intended to imply a diminution in the density of the blood, with pallor and debility, without any reference to its quantity, which may be either augmented or diminished.

## LECTURE XII.

### OBSERVATIONS ON THE HÆMORRHAGES.

INTRODUCTORY to the consideration of the more important of the hemorrhages, I shall make some remarks upon *Epistaxis*.

In the works of systematic writers this variety of blood-flow is, with few exceptions, deemed so trivial, so unimportant, that scarcely a short chapter is devoted to its distinct consideration. Yet, if closely looked into in all its bearings, relations, and varieties, it will be found, by both the speculative and the practical pathologist replete with interest. One form, which I shall term the spontaneous or idiopathic variety, furnishes us with the surest index of that state of the system termed the hemorrhagic.

Of the hemorrhages this is generally (there are, however, exceptions) the least formidable variety; it is, nevertheless, the most frequently valuable as a constitutional index.

Furthermore, there have been cases of epistaxis (and of these not a few) in which the torrent of extravasated blood has been so copious and so prolonged, as seriously to peril life; and in the treatment of which sound judgment and promptitude in action have been imperatively demanded. Judgment, to determine the moment when, without injury



to the patient (for it is often a salutary effort of nature), the hemorrhage may be checked. Promptitude, in effecting, speedily and thoroughly, the object of arresting the destructive overflow of the vital fluid.

Close observation of the natural process by which this exudation is effected, affords much useful instruction, and teaches us what the true nature is, of many of those internal and unseen hemorrhages, which were formerly, and still are popularly, referred to the rupture of the trunk of a blood-vessel. This, doubtless, is the occasional, but comparatively rare cause of a fatal hemorrhage. The most frequent cause of hemorrhages, often fatally profuse, is,—as may be observed in epistaxis, capillary exudation,—blood extravasated, not from an arterial or venous trunk, but from myriads of turgid capillary and exhaling vessels.

A remarkable case, elucidating this truth, occurred at Steevens' hospital. A young man labouring under hemoptysis was admitted a few hours before my morning visit. Having spoken to, examined, and prescribed for him, I passed on. Whilst talking to the patient who lay in the next bed, I heard a gurgling sound and turned round : the man to whom I had but a moment before been speaking was dead,—was suffocated. A minute and careful examination disclosed neither tubercle, nor cavity, nor consolidation, nor lobular nor diffuse apoplexy, nor ruptured trunk, in any part of the parenchyma of the lungs; all the larger bronchi were nearly filled with blood, which was coagulated in them, particularly at and about the bifurcation, so as to obstruct the ingress of air. It was a case of bronchial hemorrhage,—of copious sweating of blood

from innumerable capillary tubes distended with blood. I say sweating, because I doubt there being any rupture or breach of surface.

In some forms of fever, sweating so profuse has occurred as to soak through the bed, and to accumulate in large quantities in a vessel placed underneath.

A capillary extravasation of red blood may be as profuse as a capillary exudation of white blood. A mucous membrane may copiously sweat blood; I have seen the same thing happen from the pores of the external skin of the face. One case, a very remarkable one, I shall briefly refer to. The patient was a young woman four or five and twenty years of age; herself intensely strumous, as were also her parents and brothers; she was subject early in life, both before and after puberty, to spontaneous epistaxis. She was attacked with fever. The symptoms presented the usual aspect of scarlatina; a dusky red rash was universally diffused, with sore and swollen throat, but no ulceration. There was a well-marked febrile movement in the system. On the third day the whole characters of the case were altered: fever subsided, the throat was no longer complained of. Quite suddenly, petechiæ, some very small, some as large as a split pea, appeared under the cuticle, and were rapidly scattered over the whole surface; their colour was livid, and they soon became black as ink. After the lapse of a few days dark grumous blood began to ooze from the gums, from all the points of junction of the internal and external skins, and from the nares, and appeared mixed with the urine and fæces; patches of ecchymosis stained the skin over large spaces. The

debility, vascular and muscular, was extreme, and the fetor emanating from the breath and whole person in the highest degree offensive. All signs of scarlatina vanished.

In this miserable state, with a gradual augmentation of every worst symptom of purpura hemorrhagica in its most malignant form, she lingered on for nearly three weeks.

For many days before death the following remarkable phenomenon manifested itself. Blood oozed and descended in streams from the pores of the skin of the face, and, of all the external skin from those of the face only. With intense interest I watched the process. The surface having been wiped clean, minute globules of dark blood were seen to exude from every pore ; these rapidly increased in size, coalesced, and formed streams which flowed on every side; a profusion of blood was thus extravasated, in like manner as drops of rain increase in size in descending, unite, and form tortuous little rivers, on the glass of the window of a carriage.

Whether attributable to the great tenuity of the Schneiderian membrane, connected with the delicacy of the sense of smell, or to the highly vascular net-work of this membrane, or to the copiousness of the supply of blood to the brain, or to all unitedly, certain it is, that of all the hemorrhages, that most frequent of occurrence is epistaxis.

To this variety of hemorrhage some are much more prone than others, and this may depend not only on constitutional causes, such, for example, as mal-organized blood, but also upon superior delicacy of the mucous membrane and its vessels ; a condition of mucous mem-

brane, as well as of external skin, frequently characteristic of struma. Whatever be the cause, the fact is certain, that blood streams from the nares with more facility than from other mucous surfaces.

This is the case, in varied degrees, at every period of life, but much more remarkably so at the extremes of life ; the most frequent time of occurrence of epistaxis is, however, during the period of growth. I have many interesting cases recorded which prove that this hemorrhage, having appeared in early youth, disappears during mediæval life, and returns as years accumulate and old age approaches. The period of senility varies much in differently constituted individuals, and is hastened or retarded by the events and habits of the past life.

It is a curious fact that the epistaxis of the growing period of life should, in so many instances, resume its sway toward its close. It may be termed the *Epistaxis redux* of advanced age. Within the last few days I attended a lady, now in her seventy-fourth year, affected with severe hemoptysis. Thrice before, several weeks having intervened, she was similarly affected, and twice previously to the attacks of hemoptysis, she bled profusely from the nose. Inquiry elicited the following facts : In early life, antecedent to the full establishment of the catamenia, she had been a martyr to idiopathic epistaxis ; at the menstruating periods she suffered habitually much pain, and the discharges were very profuse, and at the period of the cessation of the menses, when they recurred at long and irregular intervals, the hemorrhage was excessive, and the blood came down in large clots. She had

been married at a young age, but had never been pregnant. This old lady does not appear to labour under any organic disease ; the heart's action and the breath sounds are perfectly normal. I have on record several equivalent cases.

Considering, then, the facility with which blood is exuded from the nares, it is not contrary to anticipation that mental emotions should so affect the vessels of the brain, as frequently to give rise to epistaxis. Congestions, inflammations, and diseases of the brain, are frequently preceded and accompanied by epistaxis ; this I shall have occasion hereafter more particularly to notice. Those mental emotions which produce cerebral congestion (for some, not all, produce this effect), are often signalized, and relieved too, by a flow of blood from the nares. Epistaxis is thus often a naturally provided safety-valve. The following event, of which I happened to be an eye-witness, illustrates this principle. A child of some two and a half or three years of age, in attempting to descend a flight of stairs, fell, and rolled down to the first landing-place. He was much hurt, and cried bitterly. The nurse, a strong plethoric woman, greatly attached to the child, ran to take him in her arms ; the child's father, at the head of the stairs, sternly forbade her to touch him ; she was compelled (standing at the foot of the stairs) to look on. Another attempt (after many efforts and touching appeals for help) was made by the child to descend. Again, he fell. The nurse could endure it no longer ; her feelings overpowered her. She rushed upstairs and took him in her arms, and exclaimed, in a highly excited tone, " If it

cost her her life she would save the child." She became deeply flushed, and a copious stream of blood rushed from both nostrils. This woman, whom I had frequent opportunities of afterwards seeing, had never been subject, previously or since, to any form or variety of abnormal hemorrhage. This was a well-marked instance of a strong mental emotion causing epistaxis of temporary origin, and altogether exempted from any pre-existing or hereditary hemorrhagic diathesis. I shall, on a future occasion, notice how frequently this diathesis, connected with struma, is hereditary.

A lady, in her fortieth year, of florid complexion, and uncontrolled temper, in a fit of furious and unrestrained anger, was seized with epistaxis. Blood from both nostrils flowed in profusion, and persisted so long that her family became seriously alarmed. When I saw her, she was nearly pulseless; there was a death-like pallor present, and a cold, clammy, perspiration; her voice was feeble, and she could articulate only in a whisper, yet she did not appear to be alarmed. There was no time to be lost; much blood still flowed; much descended from the posterior nares, and was swallowed; some hours previously she had vomited blood. Antecedent to my visit, all the usual means to check the blood-flow had been in vain employed. Upon close examination it was ascertained that the flow of blood was much more profuse from the left than from the right nostril; by means of a flexible catheter passed along the floor of the nose, a plug, with a strong silk thread firmly attached, was through the mouth introduced into the left posterior nostril. This completely controlled the blood-flow

at that side; as it was not desirable too suddenly wholly to arrest the bleeding, the other nostril was not plugged. The loss on the right side became now comparatively small.

So much distress, so many unpleasant consequences have occasionally arisen from the plugging of both nostrils, that, whenever practicable, one of the air passages should be left free. The double plug is often needlessly applied. Sometimes, however, it is unavoidable. It may be well to remark, that if sponge be used for a plug, it is better to enclose it in lint, otherwise, when distended by moisture, it may so insinuate itself into the narrow spaces between the delicate bones of the nose, as to cause difficulty and even injury in its removal.

Months elapsed ere this lady recovered in health, strength, and complexion, from this profuse and prolonged nasal hæmorrhage. In early life she had been subject to idiopathic epistaxis; her menses were always superabundant, sometimes extremely profuse. At each of her confinements her losses of blood were enormous. About a week before the attack of epistaxis she had menstruated copiously. Her habits of life had always been temperate. Thus, in this case, a fit of anger, or rather of fury, was the exciting cause of the epistaxis. But its dangerous profusion is to be attributed to the pre-existence of a well-marked hæmorrhagic diathesis.

The leading facts of another somewhat similar case shall be briefly detailed.

Mrs. S., aged 49, has ceased for a year and a half to menstruate. She is now labouring under organic disease of the heart. The symptoms indicate the existence of con-



tracted orifice of the mitral valve. She has had two severe attacks of rheumatic fever, one before puberty, one at the age of 26. Eight years have elapsed since she first complained of dyspnœa and palpitation. Thirteen years ago she sustained a severe mental shock, by the sudden and unexpected death of her mother, to whom she was fondly and devotedly attached; the more, perhaps, because, though long married, she was childless. The mental emotion produced by the suddenly imparted news of her mother's death was very great, she was seized with violent headach, which was followed by most profuse epistaxis; for three days the hemorrhage never ceased. She lived in a remote part of the West of Ireland, and it was not until the fourth morning after the commencement of the attack, that the physician reached her house; he found her pulseless, and apparently dying. He plugged both nostrils; she was unable to articulate, and with difficulty could swallow; she lay for upwards of three weeks in a state of insensibility; this period of time was a blank in her existence. She slowly recovered, but her natural complexion, vigour, and strength, she has never since then repossessed. In her case it is especially remarkable that, from the earliest age up to the full period of puberty, she had been subject to idiopathic epistaxis, so much so as to interfere with all her girlish amusements and occupations. The flow of blood was never during her early life profuse, but occurred so frequently, sometimes spontaneously, sometimes from the slightest causes, that she lived in a state of perpetual apprehension. When the menses were fully established the epistaxis ceased, and did not again recur till, as related,

a powerful mental emotion recalled the latent predisposition, and accounted for its all but fatal persistence and profusion.

In the pages of history we meet with several instances of hemorrhage produced by the most overwhelming of mental influences, wounded pride, thwarted and disappointed ambition. A Doge of Venice burst, as is narrated, a blood-vessel, and died suddenly, when he heard the bell of St. Mark's announce by its toll the appointment of his successor. At Salisbury, the perverse, mentally blind, and unfortunate monarch of England, James II., was, on the eve of an expected battle, which he never fought, seized with epistaxis. It continued, and confined him to bed for three days.

The influence of augmented heat or caloric upon the cerebral circulation, becomes a frequent cause of temporarily excited epistaxis. Hence it is that, at the hottest seasons of the year, hemorrhages in our climate are most frequent. Hence also it is that an overheated bath, heated rooms, indulgence in ardent spirits, the sun-stroke, violent exercises, so affect the circulation that hemorrhages oftentimes immediately ensue. Intense thought, long persisted in, renders the vessels of the brain turgid, and gives rise to a blood-flow.

Hence, too, the great imprudence and injury of ordering those patients threatened with phthisis, who evince the hemorrhagic diathesis, to overheated and dry climates; those who labour under what I have elsewhere termed hemorrhagic phthisis should never be sent to a climate which tends directly to augment the existing and often fatal evil.

Those causes which suddenly excite and stimulate the

heart's action, so as to propel blood more rapidly to the brain, do, in many persons, give rise to epistaxis. In fevers, at the commencement of the stage of reaction, this is especially and strongly exemplified. A flow of blood from the nares is the starting-point of many fevers, of none more frequently than the Rubeolous.

Some months since I happened to attend two boys, each about ten years old, in the same room. They were play-fellows and companions, but not relatives. I was much struck by the contrast between these two cases. One possessed a sound constitution, free from any hereditary taint, and had never been affected with idiopathic epistaxis. The other had not long recovered from a tedious and prolonged succession of strumous abscesses of the cervical glands, which left characteristic and deforming scars and cicatrices. From infancy he had been prone to distressing and perpetually recurring attacks of epistaxis. Twice the blood-flow was seriously profuse. Both these boys were attacked, within a few days of each other, with measles. At the time when the rash was beginning to appear they both complained of headach, and they both bled from the nose; the boy with untainted constitution had no recurrence of the bleeding, was greatly relieved by it, and passed through the disease without one untoward symptom; the boy who was marked with the signs of struma (both his parents were intensely strumous) during three days bled so frequently, so copiously, that his life was endangered. The former was in a few days perfectly restored; but months elapsed ere he who was marked with struma resumed his former ruddy and deceptive appearance of health.

Thus were evinced, in strongly contrasted relief, the temporary and salutary epistaxis of a perfect constitution, and the protracted and exhausting epistaxis of the distinctly impressed strumo-hemorrhagic diathesis.

Here it may be noticed how very distinct the hemorrhage of incoming fever is from that which takes place towards its close. Epistaxis is the most frequent variety of bleeding during the hot stage; intestinal, sometimes uterine, when the fever is advanced; and when, at this stage, it, or any other variety of hemorrhage, sets in profusely, it is a most formidable symptom, and indicates the great change which has been wrought by continued febrile action in the component ingredients and constituency of the blood. At the ingress of the reaction of fever no material change has as yet been produced; towards the close the blood has been thinned and altered.

Of all the signs of the febrile movement the most invariable is wasting. No matter what the type, this is the most uniform result. Scanty are the supplies; the primary assimilative function is, in a great measure, suspended; so must be that of sanguification. The body feeds upon itself: as fever progresses, the blood becomes more and more attenuated; and in those fevers which are caused by malaria and by animal and other poisons, the blood becomes so deteriorated, so reduced in tenacity and density, that it oozes and is exhaled from mucous surfaces. Thus a passive hemorrhage is produced, altogether distinct from the active hemorrhage which so frequently, at the incoming of fever, relieves the tension and increased action of the vessels of the brain.

The hemorrhages of incoming and outgoing fever are as distinct, the one from the other, both theoretically and therapeutically, as any two symptoms can well be.

Here, however, we must carefully avoid confusion; we must endeavour (the diagnosis is not always an easy one) to distinguish between the bleeding of exhalation and that of ulceration. In many fevers, intestinal ulceration with hemorrhage marks their advanced period.

In all the hemorrhages this is a most important point of distinction; in none more than in the uterine; in truth, it is the pivot on which the treatment mainly turns. The same remark applies to epistaxis.

A gentleman, aged 56 or 57, who had just returned from the Continent, told me that, for the previous five weeks, he had been harassed with repeated attacks of epistaxis; not a day passed without a frequent dropping of blood from the nose; he was afraid to drive out, to take part in public meetings; all his pleasures and pursuits were interfered with and spoiled; often on awaking he found his pillow stained with blood; he never lost much at a time, and was rather annoyed and distressed than materially debilitated. He had never till then bled from the nose, nor had he ever before been subject to any form or variety of hemorrhage. This fact led to a minute local examination, and then it was that the true source of the bleeding was discovered. A vascular spot of ulceration, difficult at first to see, became apparent. A few applications of the actual cautery completely cured the epistaxis. This gentleman had been, for five weeks previously, subjected to cuppings at the back of the neck, astringents, applications of ice,

saline aperients, and all sorts of dietetic restrictions. The cause of the oversight was, that he had never felt nor complained of any local pain or uneasiness.

I have met with several cases, in many points identical with that now detailed. Nay, I have seen cases of nasal polypi and consequent epistaxis treated constitutionally, the local source of the bleeding having been left wholly unexplored. Such an oversight redounds not much to the glory of medical sagacity. In epistaxis, as well as in all other hemorrhages, a most searching analysis, local and constitutional, is required, to prevent the grave diagnostic error of confounding a hemorrhage which results from local disease, ulcer, or injury, with that which springs from a constitutional cause. Obvious as all this is, it is surprising how often such an oversight is committed.

What advantage can possibly arise from treatment exclusively constitutional, in cases of uterine ulcerations or polypi, or retained placenta, or other purely local sources of hemorrhage? When, however, as it often happens, ulcerations are co-existent with the hemorrhagic diathesis, the treatment, both local and constitutional, is imperatively indicated. So it is with epistaxis: if locally caused it will not be constitutionally cured.

One of the most frightful cases of epistaxis I ever witnessed occurred in a case of organic disease of the heart. The gentleman was between thirty and forty years of age, upwards of six feet high, with very expanded chest, and great muscular development. He was born in a tropical clime, and ardent in all his passions as the sun under whose burning rays he was nurtured. Hypertrophy of the heart,



with disease of all its valves, to an extent such as I had never before nor since witnessed, was the fearful disease under which he laboured. In no instance have I heard the cardiac impulse at so great a distance from the chest. In no instance have I seen so extensive an undulation of the parietes of the left thorax and epigastrium, and elevation and sinking of the clothes that lay on the chest. In no instance has the stethoscope been impinged against my ear with so much force. I was urgently requested to go without delay to see this gentleman; I found him bleeding in torrents from both nostrils; he had been thus bleeding for hours before my visit; the quantity of blood extravasated was enormous. Before I left the house the hemorrhage had abated. An intelligent medical pupil, a friend of his own, remained with him. The bleeding returned with so much violence that his friend, apprehensive of fatal consequences, was induced to plug both nostrils, from the posterior nares, with plugs well steeped in oil of turpentine; after some time heat and tingling were produced soon, burning pain, which increased so much that it became necessary to remove the plugs; even after their removal the pain increased so as to be absolutely maddening. He lived for several weeks, but never afterwards bled from the nose. Probably, as a consequence of the action of the turpentine, the membrane remained permanently thickened, so as to render future bleeding improbable.

Possibly, in some persons of hemorrhagic diathesis, a state of the membrane, analogous to that produced here by the application of turpentine, may naturally exist and im-



pede the flow, which would otherwise take place from the mucous surface of the nares.

I have repeatedly heard some, who were harassed with deep flushings, headachs, facial eruptions, heat of head and face, say, they would give the world to bleed from the nose, and they had all the sensations, such as heat, tingling; turgescence of vessels, throbbing, and redness, which very often precede and forewarn a flow of blood from the nares.

In these cases I have known much mitigation of symptoms to ensue after the repeated application of leeches to the septum. This method of leeching, some are too irritable to endure. In a very few it has produced violent sneezing. As a general rule, it is, in suitable cases, an excellent method of abstracting blood. A useful hint may be derived from the action of the turpentine; although, in this case, it was too violently applied. This gentleman died from the sudden rupture of one of the tendinous chords of the mitral valve. The sound of the rupture was audible to himself. It occurred in a moment of anger and indignation; he had been most unkindly treated by one who should have been the last so to treat him. From the moment of the rupture he was in agonies; they endured for six hours, when he expired. The heart was preserved in the museum of the Park-street School of Medicine, and was one of the most valuable preparations amongst those of that excellent pathological collection. This is one amongst numerous instances of a temporary epistaxis caused by an organic disease.

Disease of the brain is not unfrequently accompanied by this symptom. In the month of December last I was sent

for in haste to see a lady in her fifty-eight year, who suddenly, and without any premonition, was, whilst sitting at dinner, seized with severe epistaxis; this was her first, and, up to the present time, her last hemorrhagic seizure. It was preceded by obscure signs of cerebral disease. Since the attack of epistaxis the evidences of gradually increasing organic disease of the brain are unequivocal.

The following case of a single occurrence of epistaxis may (as illustrative of the subject) be worth placing on record: Mr. S., between fifty-five and fifty-eight years of age, of low stature, large head, short neck, very large chest and trunk, with comparatively diminutive extremities, has been for years subject to that chronic form of bronchitis and habitual catarrh, which abates during the summer, but never wholly departs, accompanied by expectoration, and an habitually restricted and wheezing respiration. He retired to rest in the winter season with a more than usual amount of thoracic oppression. He slept heavily, but unrefreshingly. Early in the morning he awoke, with intense headach and throbbing of the vessels of the head, heat, and flushing. Soon blood began to flow from both nares, and that to a very considerable amount. Finding that from the natural blood-flow no prompt relief was derived, and that the head symptoms were becoming even more urgent, I determined to open a vein in the arm. He was raised in bed: a full stream of blood issued from the orifice. I remained with him, and allowed the blood to flow till the force of the cardiac and arterial impulses was subdued. He became slightly faintish; the epistaxis ceased, and every urgent symptom was speedily relieved.

Before taking a final leave of that part of the subject which relates to the occasional and temporary conditions of the vascular system, which give rise to epistaxis, a few words may be devoted to the consideration of one of its very frequent varieties, which, conjoined with other hemorrhages, holds a prominent position amongst the symptoms indicative of a remarkable change in the texture of the blood, a change of which sea-scurvy and purpura are the clearest types.

Sea-scurvy is primarily the result of a nutriment either deficient in quantity, or injurious in quality, generally of both. This altered condition of the blood, and its consequence, hemorrhage, may arise from purely dietetic causes. It is a remarkable fact, that this change in the structure of the blood is accompanied by a corresponding change in that of the solids. The gums become spongy and bleeding. Ulcers are readily produced, and refuse to heal. Old and perhaps long-healed sores re-ulcerate; previously united fractures disunite; the muscles are enfeebled; and the brain and nerves, not deriving from the blood a full organic supply, are prostrated in function; the spirits are miserably depressed; the will loses its influence, and death is preferred to intellectual or muscular labour; also, blood oozes from many surfaces, frequently from the nares, and the effluvium emanating from the breath and person is often highly fetid.

In contemplating the causes of sea-scurvy, it is necessary to take into account the tedium and monotony of a seafaring life. These, I am informed by persons who have spent weeks and months without ever seeing land, are

most irksome and depressing. Hence, the sudden and extraordinary restorative effects of exhilaration of the spirits. The sight of land, the prospect of plentiful supplies of wholesome and vegetable food, by raising the spirits, by improving the nervous and respiratory functions, go far in promoting recovery, even before these supplies come into operation. Hence, too, the important rule, that it is the duty of those in command in long voyages, to provide for the ship's crew not only ample supplies of wholesome food, but also such varied amusements as shall render the time spent on the ocean less wearisome, tedious, and monotonous.

During the late famine, many patients, affected with purpura, presenting all the signs of sea-scurvy, were admitted into the wards of Steevens' hospital. They did not belong to the class of the destitute.

I learned that their whole sustenance was limited to a very stinted allowance of wheaten bread. Weak tea they took in large quantities. No butter, scarcely any milk, and very little sugar. Some partook largely of weak and adulterated coffee. The sensation of want and emptiness from insufficiency of solid food, was in a measure counteracted by drinking in large quantities these weak infusions. Thus an insufficient and watery diet, too scantily supplying the staminal principles necessary to effect a perfect sanguification, is capable of giving rise to all the distressing symptoms by which purpura is characterized, and amongst them to many forms of hemorrhage, including epistaxis. In these cases we may aver, that there are simultaneously softening of the blood and softening of the solids. Such

cases of purpura, if not too far advanced, are perfectly curable. The treatment is mainly dietetic. The vegetable acids materially assist in restoring a healthy sanguification. In the hospital we have given, with good effect, to these patients cold infusion of Peruvian bark, mixed in equal proportion with lime-juice, having added, in many cases, the citrate of quina, and as much substantial food as an enfeebled stomach could with facility digest. A few of these cases which resisted treatment evinced before death signs of dropsical effusions, as if to show how an abnormal condition of blood leads first to effusions of coloured blood, then to effusions of uncoloured blood, often to both combinedly, and also to prove how intimately connected the one with the other are the passive hemorrhages and dropsical effusions.

The epidemic and fatal dysentery, or, as it has not inaptly been termed, bloody flux, which has lately and during former famines swept hundreds away, is mainly referable to deterioration of the circulating fluid, caused by insufficient and unsuitable nutriment. Its origin is dietetic and the most efficient item in the treatment is likewise dietetic.

To another source of sanguineous exudation, nearly akin to that to which allusion has just been made, we must devote a brief consideration. During the progress of protracted chronic organic disease, the whole circulating mass undergoes a slow, gradual, progressive change, which ultimately gives rise both to hemorrhage and dropsy. During the long course of these diseases, the digestive and respiratory functions are impaired. The blood, impercep-

tibly, is altered, and the enfeebled exhalents allow either coloured or uncoloured blood to escape; the former usually from mucous surfaces, the latter either into the meshes of the areolar tissue, or into the serous cavities, or, as frequently happens, into both. The diarrhœas and profuse perspirations, which often characterize such cases, are referable to the same cause.

A case or two will best illustrate the subject. An officer returned to this country in broken-down health; he had suffered for many months from frequently recurring attacks of intermitting fever. The fever and ague were caused by the malaria of Hong Kong. His liver was considerably and permanently enlarged, the spleen enormously hypertrophied; he was much atrophied; but the paroxysms of ague had ceased. Soon the ankles became œdematous, and blood trickled almost constantly from the nose, and, curiously enough, it happened here, as in a few other cases of this nature which I have witnessed in which there was great enlargement of the spleen, the blood flowed exclusively from the left nostril. The trickling of blood from the left nostril continued for many days; it ceased; he became universally dropsical. He lingered on for a long while in a hopeless condition. During the whole lengthened course of the disease he was unable to receive and digest a sufficient quantity of food (even of the lowest quality) to create a normal supply of blood. Such is the epistaxis so often symptomatic of diseased liver and spleen.

A labouring man, suffering from the effects of tuberculated liver, caused by habitual imbibition of alcohol in large quantities, was suddenly attacked with melæna.

Blood was vomited, and descended through the intestinal tube to an enormous amount. He was brought to the threshold of the grave ; he could neither speak nor move ; for hours he was pulseless ; he remained and continued to be deadly pale. There was no second attack of hemorrhage, but a dropsical effusion soon after manifested itself. The effusion into the sac of the peritoneum was very great. He derived, more than once, temporary relief from tapping. At first, the dropsy was not extended beyond the areolar membrane and cavity below the diaphragm. The upper and lower halves of the body presented a singular contrast ; that above the diaphragm exceedingly attenuated ; that below swollen out to a great size. Afterwards, as the structure of the blood became more and more impaired, the dropsy was universal. This man's liver presented the usual appearance of that which has been termed the whiskey liver.

About two years ago I attended a lady in her thirty-fourth year, in whom epistaxis, towards the close of the disease, appeared, at once difficult to control, and, in her exhausted state, fearfully debilitating. Before her marriage, she had laboured under chlorosis. Soon after her marriage (ten years previously), pleuritis, with great effusion, had nearly terminated her existence. The right side remained ever afterwards contracted. Her recovery, however, was so complete, that she became the mother of a fine child. About twelve months before her death, an abdominal moveable tumour caused her much uneasiness ; this disappeared. She then suffered from uterine irritation, and lastly, enlargement of the liver. Ascites, and drop-



sical effusion confined to the lower extremities, with sometimes profuse perspirations, sometimes wasting diarrhœas, were the prominent symptoms. About six weeks before the fatal termination of the disease, she bled periodically from both nostrils. The bleeding always took place early in the morning, on awakening from a short, broken, and disturbed sleep. The first bleeding was the most copious, and caused a sudden and great change in her whole aspect and appearance. The subsequent bleedings, which recurred daily at the same hour, were far less profuse, yet, to her, extremely debilitating. For ten days the epistaxis recurred regularly ; it then became less frequent and less regular, and, for at least a fortnight before her death, wholly ceased. This patient was to the utmost possible degree attenuated. Thus was epistaxis co-existent with dropsy; and both the result of protracted chronic exhausting organic disease. Many, indeed, are the chronic diseases, which, either with or without specific fever, terminate in effusions of blood, both coloured and uncoloured.

Sometimes an altered and deteriorated condition of the blood, productive of epistaxis and other hemorrhages, is caused by the frequent and long continued introduction into the system of poisons, such as malaria, mercury, alcohol, tobacco, &c.

Not many days ago I saw, a case of a young man in whom purpura hemorrhagica, in its most fearful and fatal form, was produced solely by the habitual abuse of these poisons, particularly alcoholic. His family, by his death, sustained a great loss. His habits of life were suicidal.

A corresponding case, one in many respects resembling

that reported at the commencement of this paper, fell under my observation about three years since. It was that of a young man who, influenced by injurious companionship and an almost unlimited command of newly-acquired wealth, plunged unrestrainedly into every species of sensual indulgence ; habits of intoxication became so inveterate, that at no time of the day was he perfectly sober ; rarely was he seen without a pipe or a cigar in his mouth ; courses of mercury for the cure of syphilis succeeded each other in quick succession. For nearly three years this course of life, without any apparent detriment to health, was persisted in. In about a fortnight after he had been exposed to the infection of small-pox, he sickened ; having for two days struggled against prostrating disease, he was compelled to succumb, and to remain in bed. He complained of little else than of (as he termed it) distressing lumbago. On the morning of the third day a rash was discovered ; and after the lapse of some hours the exanthem exhibited the characters of the variolous eruption. Long before the vesicles approached maturation they not only ceased to fill, but so far subsided as in a great degree to lose their specific features. Livid and black were now the numerous petechial spots, of various sizes, with vibices and large ecchymoses, which unexpectedly appeared over the whole surface. It was remarkable how abruptly this fatal change took place ; till then the case presented no other characters than those of variola with fever. Soon, thin, dark blood began to trickle from the nares, from the angles of the mouth, and many mucous surfaces. The odour emanating from the whole surface

was insufferable. Before death he was semi-putrid. On the fourth day from the appearance of the black petechiæ, he died. Thus it was that a previously poisoned blood rendered an accidental febrile disease speedily and inevitably fatal.

It is lamentable to think how many young men there are who run this mad career of excess, unaware of the fatal sword which is suspended over them. They fling away life, health, and real enjoyment, as an untutored savage discards a valuable mass of precious metal, and clutches a string of worthless but glittering baubles. Months, even years, may elapse without any warning of danger; an attack of some prevailing epidemic, or of inflammation or fever, comes unexpectedly upon them. The chances of recovery, the chances of triumphing over the disease are, to them who have so lived, an hundred-fold diminished. Such is the hemorrhagically fatal effect of the gradual and prolonged infusion into the system and blood of those substances which in habitual excess become slow but virulent poisons. I cannot readily forget the observation of a lady whose husband was dying of fever, to which, at an early period of the disease, the appearance of lurid petechiæ with utter prostration, gave an all but hopeless character. She had herself abandoned all hope, having been painfully cognizant of the ruinous career he had for years previously been running. Alluding to his hopeless state, she said: "He has squandered away a fine constitution, an exalted intellect, and a princely fortune; all these valuable gifts he has sacrificed on the altar of unrestrained sensuality: on his offspring he has entailed impaired constitutions and poverty."

Several years ago I witnessed a remarkable and fatal case of supervening purpura hemorrhagica. So slight were the symptoms, that the note in which Sir Philip Crampton was requested to see this gentleman was couched in language which did not lead him to suppose that aught in the slightest degree of import ailed ; it had reference principally to some trivial and non-medical subject about which he wished to speak with Sir Philip Crampton. The note concluded by observing that, if he happened to pass that way, he would be glad to see him, as he did not feel himself quite well enough to call at Sir Philip's house. I mention this to show how slight the premonitory and existing symptoms at that time were. Certainly, one not well acquainted with the earlier characters of this fatal disease might easily be thrown off his guard. Sir Philip, however, did not fail to recognise its true nature and its danger, though at his first visit there was apparently little in the characters of the case to warrant any, even the slightest apprehension. He found him sitting up, and in the act of writing a note ; he was advised to remain in bed. On the following day the prominent symptoms were, fever, a dusky red rash, generally diffused, soreness of the throat, singular prostration of strength, and severe pain in the lumbar region. After the lapse of a few hours the appearance of livid petechiæ, numerous vibices, large ecchymoses, particularly wherever pressure, even the slightest, happened to be applied, evinced but too certainly the rapidly fatal tendency of the disease. At the end of three days from the time when re-action was established, he expired. It was a remarkable fact that, having been

cupped over the loins, back, ichorous blood never ceased to flow from the wounds inflicted by the scarificator, till he ceased to breathe. This gentleman held an official situation, which, for many hours daily, confined him to the desk. What the predisposing and exciting causes of a disease so malignant, so hurriedly fatal were in this case, I am unable to tell. Cases do occur which, in the present state of our knowledge, baffle all our efforts to throw a clear and satisfactory light upon their origin and causation.

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